

**UPDATED
SCREENING-LEVEL ECOLOGICAL
RISK ASSESSMENT (SLERA)
FOR THE
GULFCO MARINE MAINTENANCE
SUPERFUND SITE
FREEPORT, TEXAS**

PREPARED BY:

**Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive Suite 4004
Round Rock, Texas 78664
(512) 671-3434**

FEBRUARY 2, 2009

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	3
LIST OF FIGURES.....	4
LIST OF PLATES.....	4
LIST OF APPENDICES.....	5
1.0 INTRODUCTION.....	6
1.1 PURPOSE AND SCOPE.....	7
1.2 SITE SETTING AND HISTORY	8
2.0 SCREENING-LEVEL PROBLEM FORMULATION AND ECOLOGICAL EFFECTS CHARACTERIZATION (STEP 1)	10
2.1 ENVIRONMENTAL SETTING	10
2.2 NATURE AND EXTENT OF POTENTIAL CONTAMINATION	13
2.3 POTENTIALLY COMPLETE EXPOSURE PATHWAYS AND PRELIMINARY CONCEPTUAL SITE MODEL	14
2.4 THREATENED AND ENDANGERED SPECIES	14
2.5 ASSESSMENT AND MEASUREMENT ENDPOINTS.....	15
2.5.1 Terrestrial Assessment Endpoints	15
2.5.2 Estuarine Wetland and Aquatic Assessment Endpoints.....	16
2.5.3 Measurement Endpoints	17
2.6 SELECTION OF AND COMPARISON TO ECOLOGICAL BENCHMARKS.....	18
2.6.1 Soil.....	18
2.6.2 Sediment.....	20
2.6.3 Surface Water	21
3.0 SCREENING-LEVEL EXPOSURE ESTIMATE AND RISK CALCULATION (STEP 2)	23
3.1 POTENTIAL RECEPTORS.....	23
3.1.1 Terrestrial Receptors	23
3.1.2 Estuarine Wetland and Aquatic Receptors	25
3.2 SCREENING-LEVEL EXPOSURE ESTIMATES	26
3.3 TOXICITY REFERENCE VALUES.....	29
3.4 SCREENING-LEVEL RISK ESTIMATES.....	30
3.4.1 South Area Soil	31
3.4.2 North Area Soil	31
3.4.3 Background Area Soil	31
3.4.4 Intracoastal Waterway Sediment.....	31
3.4.5 Intracoastal Waterway Background Sediment	32
3.4.6 North Area Wetlands Sediment.....	32

3.4.7	Pond Sediment.....	32
3.4.8	Surface Water	32
4.0	UNCERTAINTY ANALYSIS FOR STEPS 1 AND 2.....	36
4.1	EXPOSURE ANALYSIS UNCERTAINTY.....	36
4.1.1	General Exposure Analysis Uncertainties	36
4.1.2	Receptor-Specific Uncertainties.....	38
4.1.3	Chemical-Specific Uncertainties	38
4.2	EFFECTS CHARACTERIZATION UNCERTAINTY	39
4.3	Risk Characterization Uncertainty	40
5.0	SUMMARY AND CONCLUSIONS OF THE SLERA.....	42
5.1	SUMMARY OF RISK EVALUATION.....	42
5.1.1	Soil and Sediment.....	42
5.1.2	Surface Water	45
5.2	SELECTION OF COPECS FOR FURTHER EVALUATION	45
5.3	SCIENTIFIC MANAGEMENT DECISION POINT.....	47
6.0	REFERENCES	48

LIST OF TABLES

<u>Table</u>	<u>Title</u>
1	Exposure Point Concentration (mg/kg) – South Area Surface Soil
2	Exposure Point Concentration (mg/kg) – South Area Soil
3	Exposure Point Concentration (mg/kg) – North Area Surface Soil
4	Exposure Point Concentration (mg/kg) – North Area Soil
5	Exposure Point Concentration (mg/kg) – Background Soil
6	Exposure Point Concentration (mg/kg) – Intracoastal Waterway Sediment
7	Exposure Point Concentration (mg/kg) – Intracoastal Waterway Background Sediment
8	Exposure Point Concentration (mg/kg) – Wetland Sediment
9	Exposure Point Concentration (mg/kg) – Pond Sediment
10	Exposure Point Concentration (mg/L) – Intracoastal Waterway Surface Water (Total)
11	Exposure Point Concentration (mg/L) – Intracoastal Waterway Background Surface Water (Total)
12	Exposure Point Concentration (mg/L) – Wetland Surface Water (Total)
13	Exposure Point Concentration (mg/L) – Pond Surface Water (Total)
14	Exposure Point Concentration (mg/L) – Intracoastal Waterway Surface Water (Dissolved Metals)
15	Exposure Point Concentration (mg/L) – Intracoastal Waterway Background Surface Water (Dissolved Metals)
16	Exposure Point Concentration (mg/L) – Wetland Surface Water (Dissolved Metals)
17	Exposure Point Concentration (mg/L) – Pond Surface Water (Dissolved Metals)
18	Terrestrial Habitat Assessment and Measurement Endpoints

19	Estuarine Wetland and Aquatic Habitat Assessment and Measurement Endpoints
20	Terrestrial Exposure Parameters
21	Estuarine Wetland and Aquatic Exposure Parameters
22	Ecological Hazard Quotients Exceeding One for the South Area
23	Ecological Hazard Quotients Exceeding One for the North Area
24	Ecological Hazard Quotients Exceeding One for the Background Areas
25	Summary of Surface Water Data and Ecological Benchmarks

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
1	Site Location Map
2	Site Map
3	Wetland Map
4	Intracoastal Waterway Background Sample Locations
5	Terrestrial Ecosystem Conceptual Site Model
6	Estuarine Ecosystem Conceptual Site Model

LIST OF PLATES

<u>Plate</u>	<u>Title</u>
1	Investigation Sample Locations
2	Zinc Concentrations in Surface Soil and Sediment

LIST OF APPENDICES

<u>Appendix</u>	<u>Title</u>
A	Pro UCL Output
B	Ecological Risk Calculations for South Area Soil
C	Ecological Risk Calculations for North Area Soil
D	Ecological Risk Calculations for Background Soil
E	Ecological Risk Calculations for Intracoastal Waterway Sediment
F	Ecological Risk Calculations for Intracoastal Waterway Background Sediment
G	Ecological Risk Calculations for Wetland Sediment
H	Ecological Risk Calculations for Pond Sediment
I	Ecological Risk Calculations Using LOAELs
J	References for the Appendices

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) named the former site of Gulfco Marine Maintenance, Inc. (the Site) in Freeport, Brazoria County, Texas to the National Priorities List (NPL) in May 2003. The EPA issued a modified Unilateral Administrative order (UAO), effective July 29, 2005, which was subsequently amended effective January 31, 2008. The UAO required the Respondents to conduct a Remedial Investigation and Feasibility Study (RI/FS) for the Site. The Statement of Work (SOW) for the RI/FS at the Site, provided as an Attachment to the UAO from the EPA, requires an Ecological Risk Assessment (ERA). The SOW specifies that the Respondents follow EPA's *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (EPA, 1997). This guidance document proposes an eight-step approach for conducting a scientifically defensible ERA:

1. Screening-Level Problem Formulation and Ecological Effects Evaluation;
2. Screening-Level Preliminary Exposure Estimate and Risk Calculation;
3. Baseline Risk Assessment Problem Formulation;
4. Study Design and Data Quality Objectives;
5. Field Verification of Sampling Design;
6. Site Investigation and Analysis of Exposure and Effects;
7. Risk Characterization; and
8. Risk Management.

Briefly, Steps 1 and 2 of the process are scoping phases of the ERA in which existing information is reviewed to preliminarily identify the ecological components that are potentially at risk, the chemicals of potential ecological concern (COPECs), and the transport and exposure pathways that are important to the ERA. This process is conducted using conservative assumptions to avoid underestimating risk or omitting receptors or COPECs, and constitutes the Screening-Level Ecological Risk Assessment (SLERA). Step 3 is the Baseline Problem Formulation that uses the results of the SLERA to identify methods for risk analysis and characterization, resulting in the identification of ERA data needs for the RI/FS. Steps 4 through 7 include formalization of the data needs, data collection, and data analysis for the risk characterization. Risk management activities are the eighth step in the process.

Steps 1 and 2 were performed through the submittal of an initial SLERA based on pre-RI data to EPA on November 17, 2005 as outlined in the SOW. The initial SLERA recommended collecting additional data to better characterize the nature and extent of contamination and potential risks associated with the Site. These data needs were identified in the RI/FS Work Plan (PBW, 2006a), which was approved with modifications by EPA on May 4, 2006 and finalized on May 16, 2006. Data needs were based on the preliminary conceptual site models (CSMs) described in the Work Plan. Identification of COPECs for the baseline ecological risk assessment (BERA), which was one of the primary objectives of the initial SLERA, is based on exceedences of risk-based criteria by maximum soil and sediment concentrations. However, given the limited data available for the Site when the initial SLERA was conducted, eliminating COPECs from further evaluation was not performed.

As discussed at the August 4, 2005 Project Scoping Meeting and provided for in the RI/FS Work Plan, the SLERA and the resulting Scientific Management Decision Point (SMDP) were to be re-evaluated after the complete database of soil, sediment, and surface water samples collected during the RI was available. The Nature and Extent Data Report (NEDR) (PBW, 2009) providing these data was submitted to EPA on XXX and was approved by EPA on XXX. This updated SLERA presents a re-evaluation of the November 16, 2005 SLERA based on the data presented in the NEDR.

1.1 PURPOSE AND SCOPE

The purpose and scope of this document is to summarize the analytical data for environmental media sampled during the RI and to conduct an updated SLERA based on those data. The SLERA is a conservative assessment and serves to evaluate the need and, if required, the level of effort necessary to conduct a baseline ecological risk assessment. Per EPA guidance (EPA, 2001), the SLERA provides a general indication of the potential for ecological risk (or lack thereof) and may be conducted for several purposes including: 1) to estimate the likelihood that a particular ecological risk exists; 2) to identify the need for site-specific data collection efforts; or 3) to focus site-specific ecological risk assessments where warranted.

This document contains the following steps and key elements, which are defined in EPA guidance (1997):

Step 1

- Description of the Site setting;
- Identification of the preliminary site-related chemicals; and
- Development of the preliminary conceptual site exposure model.

Step 2

- Calculation of conservative screening-level exposure and risk;
- Identification of COPECs; and
- Identification of assessment endpoints based on the management goals for the Site.

This report concludes with an updated SMDP, which provides documentation for whether further assessment (i.e., proceeding with the baseline ecological risk assessment) is necessary, and helps guide the next phases of evaluation, if necessary.

1.2 SITE SETTING AND HISTORY

The Site is located northeast of Freeport, Texas in Brazoria County at 906 Marlin Avenue (also referred to as County Road 756). The Site consists of approximately 40 acres within the 100-year coastal floodplain along the north bank of the Intracoastal Waterway between Oyster Creek to the east and the Old Brazos River Channel to the west. Figure 1 provides a map of the site vicinity, while Plate 1 provides a detailed site map and shows site features and sampling locations.

From 1971 through 1999, at least three different owners used the Site as a barge cleaning facility. During the 1960s, the Site was used for occasional welding but there were no on-site structures. Beginning in approximately 1971, barges were brought to the facility and cleaned of waste oils, caustics and organic chemicals, with these products stored in on-site tanks and later sold. Sandblasting and other barge repair/refurbishing activities also occurred on the Site. At times during the operation, wash waters were stored either on a floating barge, in on-site storage tanks, and/or in surface impoundments on Lot 56 of the Site (Figure 2). The surface impoundments were closed under the Texas Water Commission's (TCEQ predecessor agency) direction in 1982.

Marlin Avenue divides the Site into two areas. For the purposes of this report, it is assumed that Marlin Avenue runs due west to east. The property to the north of Marlin Avenue (the North Area) consists of undeveloped land and the closed impoundments, while the property south of

Marlin Avenue (the South Area) was developed for industrial uses with multiple structures, a dry dock, sand blasting areas, an aboveground storage tank (AST) tank farm that is situated on a concrete pad with a berm, and two barge slips connected to the Intracoastal Waterway.

The South Area is zoned as “W-3, Waterfront Heavy” by the City of Freeport. This designation provides for commercial and industrial land use, primarily port, harbor, or marine-related activities. The North Area is zoned as “M-2, Heavy Manufacturing.” Restrictive covenants prohibiting any land use other than commercial/industrial have been filed for all parcels within both the North and South Areas.

Adjacent property to the north, west and east of North Area is unused and undeveloped. Adjacent property to the east of the South Area is currently used for industrial purposes while the property directly to the west of the property is currently vacant and previously served as a commercial marina. The Intracoastal Waterway bounds the Site to the south. Residential areas are located south of Marlin Avenue, approximately 300 feet west of the Site, and 1,000 feet east of the Site.

2.0 SCREENING-LEVEL PROBLEM FORMULATION AND ECOLOGICAL EFFECTS CHARACTERIZATION (STEP 1)

Problem formulation establishes the goals, breadth and focus of the SLERA by describing the physical features of the site, the communities of potential receptors present at the site, the selection of assessment and measurement endpoints, and potential exposure pathways. This information serves as the basis for the conceptual site model, which is used to focus the remaining steps of the SLERA.

2.1 ENVIRONMENTAL SETTING

The Site is located between Galveston and Matagorda Bays and is situated along approximately 1200 feet (ft.) of shoreline on the Intracoastal Waterway. The Intracoastal Waterway is a coastal shipping canal that extends from Port Isabel to West Orange on the Texas Gulf Coast and a vital corridor for the shipment of bulk materials and chemicals. The Texas Department of Transportation estimates that \$35.5 billion worth of goods was moved over the waterway in 1986. In 1980, it was estimated that almost two million recreational boat trips used the Intracoastal Waterway and the commercial fishing industry uses the waterway for access to the Gulf of Mexico (TSHA, 2005).

The South Area includes approximately 20 acres of upland that were created from dredged material. Prior to construction of the Intracoastal Waterway, this area was most likely coastal wetlands. The North Area, excluding the capped impoundments and access roads, is considered estuarine wetland. The upland areas (approximately five acres in size) support a variety of herbaceous vegetation that is tolerant of drier soil conditions.

There are two ponds on the North Area, east of the impoundments. The larger of the two ponds is the Fresh Water Pond while the smaller pond is the Small Pond. It should be noted, however, that based on field measurements of specific conductance and salinity, the water in the Fresh Water Pond is brackish while water in the Small Pond is less brackish but would not be classified as fresh water. The Fresh Water Pond appears to be a borrow pit where soil and sediment were removed when constructing/capping the lagoon and water depth is generally 4 to 4.5 feet deep. The Small Pond is a very shallow depression that tends to dry out during summer months and periods of drought; the water depth was approximately 0.2 feet when sampled in July 2006 and

nearly dry when sampled in June 2008. Based on field observations, the wetland in the North Area is tidally connected to Oyster Creek and the Intracoastal Waterway through a natural swale (draining northeast).

Figure 3 depicts wetlands areas in the Site vicinity. Wetlands are the transitional zones between uplands and aquatic habitats and usually include elements of both. The wetlands at the Site are typical of irregularly flooded tidal marshes on the Texas Gulf Coast. The lower areas in the northern half of the property are dominated by obligate and facultative wetland vegetation such as saltwort (*Batis maritima*), sea-oxeye daisy (*Borrchia frutescens*), shoregrass (*Monanthocloe littoralis*), Carolina wolf berry (*Lycium caroliniaum*), spike sedge (*Eleocharis sp.*), and glasswort (*Salicornia bigelovii*). Higher ground near the road supports facultative wetland vegetation such as eastern bacchari (*Baccharis halimifolia*), sumpweed (*Iva frutescens*), and wiregrass (*Spartina patens*). Near the road there are several shallow depressions that apparently collect and hold enough freshwater to allow homogenous stands of saltmarsh bulrush (*Schoenoplectus robustus*) to develop.

According to the United States Department of Agriculture (USDA) County Soils Maps (USDA, 1981), surface soils south of Marlin Avenue are classified as Surfside clays, and soils north of the road are classified as Velasco clays. Both soils are listed on the state and federal soils lists as hydric soils. The Velasco series consists of very deep, nearly level, very poorly drained saline soils. These soils formed in thick recent clayey sediments near the mouth of major rivers and streams draining into the Gulf of Mexico. They occur on level to slightly depressed areas near sea level and are saturated most of the year. Slope is less than one percent. The Surfside series consists of very deep, very poorly drained, saline soils that formed in recent clayey coastal sediments. They are saturated most of the year, and are on level to depressed areas near sea level with a slope less than one percent. It should be noted, however, that during drought periods, much of the wetlands north of the Site is dry and desiccated with standing water confined to the drainage areas.

The South Area contains some small areas of undisturbed terrestrial or upland habitat and resident wildlife is likely limited. Shorebirds have constructed nests on some of the vertical structures at the Site. Much of the South Area is covered with concrete slabs associated with former structures or site operations.

The North Area supports wildlife that would be common in a Texas coastal marsh. Fiddler crabs (*Uca rapax*) are likely the most abundant crustacean in the North Area. Other crustaceans found at the Site were fiddler crabs (*Uca panacea*), and hermit crabs (*Clibanarius vittatus*). The most common gastropod is the marsh periwinkle (*Littorina irrorata*). The Site is also used by a variety of shorebirds. Birds observed at the Site include great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), green heron (*Butorides striatus*), white ibis (*Eudocimus albus*), glossy ibis (*Plegadis falcinellus*), and willets (*Catoptrophorus semipalmatus*). The Site provides suitable habitat for rails, sora, and gallinules and moorhens. The Site is also used by a variety of small mammals, rodents, and reptiles.

Other than gross disturbances in the wetlands area due to impoundment cap and other man-made upland terrain, the North wetlands area is functionally and visually identical to the adjacent wetlands area. Likewise, field notes taken during sediment sampling indicated consistent sediment descriptions between areas where compounds were measured at concentrations greater than their screening levels and/or estimates of risk show a potential for adverse effects were not noted and areas with no screening level exceedances. While a benthic community survey has not been completed for the Site or at sampling locations with screening level exceedances, there were no observable differences in the benthic community structure or abundance when compared to other areas in the wetlands.

The Intracoastal Waterway supports barge traffic and other boating activities. The area near the Site is regularly dredged and, as noted by the United States Fish and Wildlife Service (USFWS), shoreline habitat is limited (USFWS, 2005a). There is a small amount of intertidal emergent marsh in the upper end of each of the barge slips. Sand and silt has accumulated in the ends of the slips and is supporting small stands of gulf cordgrass (*Spartina alterniflora*). Sheetpile and concrete bulkheads protect the remainder of the shoreline. The bulkheads provide habitat for oysters (*Crassostrea virginica*), barnacles (*Balanus improvisus*), sea anemones (*Bunodosoma cavernata*), limpets and sponges.

Fishing is known to occur on and near the Site. Red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), spotted seatrout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*) and others are reportedly caught in the area. It should be noted that, during the fish sampling conducted for the human health fish ingestion pathway risk assessment, red drum were not caught (using nets) as frequently as other species, presumably because of a lack of habit and

prey items to keep them near the Site (see discussion in NEDR (PBW, 2009)). Recreational and commercial fishermen collect blue crabs (*Callinectes sapidus*) from waterways near the Site. The Texas Department of State Health Services has banned the collection of oysters from this area due to biological hazards and they have issued a consumption advisory for king mackerel for the entire Gulf Coast due to mercury levels (TDSHS, 2005).

2.2 NATURE AND EXTENT OF POTENTIAL CONTAMINATION

Data related to the nature and extent of potential contamination in ecologically-relevant media (eg., soil, sediment, and surface water) at the Site were obtained as part of the RI and, as noted previously, are discussed in the NEDR (PBW, 2009). Unless otherwise noted, the samples were analyzed for the full suite of analytes as specified in the approved Work Plan (PBW, 2006a). Plate 1 and Figure 4 provide sample locations for these samples while Tables 1 through 17 summarize the analytical data.

Eighty-three surface soil samples and 83 subsurface soil samples (0 to 0.5 ft below ground surface (bgs) for the surface samples and 0.5 ft to 4 ft bgs for the subsurface samples) were collected in the South Area while 18 surface soil samples and 18 subsurface soil samples were collected in the North Area. Two additional surface soil samples were collected near the former transformer shed at the South Area and analyzed for polychlorinated biphenyls (PCBs). Ten background soil samples were collected within the approved background area approximately 2,000 feet east of the Site near the east end of Marlin Avenue.

Sixteen sediment samples were collected from the Intracoastal Waterway in front of the Site while nine background sediment samples were collected from the Intracoastal Waterway east of the Site, and across the canal. One additional sediment sample was collected from the Intracoastal Waterway near the Site and analyzed for DDT. Forty-nine sediment samples were collected in the North Area wetlands. Ten additional sediment samples were collected from the North Area wetlands and analyzed for DDT; five of these samples were also analyzed for zinc. A total of eight sediment samples were collected from the two ponds located in the North Area.

Four surface water samples were collected in the Intracoastal Waterway in front of the Site while four surface water samples were collected from the background surface water area – the Intracoastal Waterway east of the Site, and across the canal. Four surface water samples were

collected in the wetlands drainage areas north of Marlin Avenue and a total of six surface water samples were collected from the two ponds located in the North Area. Chemical analyses of these surface water samples included both total and dissolved concentrations of metals.

2.3 POTENTIALLY COMPLETE EXPOSURE PATHWAYS AND PRELIMINARY CONCEPTUAL SITE MODEL

Identification of potentially complete exposure pathways is used to evaluate the exposure potential as well as the risk of direct effects on ecosystem components. In order for an exposure pathway to be considered complete, it must meet all of the following four criteria (EPA, 1997):

- A source of the contaminant must be present or must have been present in the past.
- A mechanism for transport of the contaminant from the source must be present.
- A potential point of contact between the receptor and the contaminant must be available.
- A route of exposure from the contact point to the receptor must be present.

Exposure pathways can only be considered complete if all of these criteria are met. If one or more of the criteria are not met, there is no mechanism for exposure of the receptor to the contaminant. Potentially complete pathways used in the SLERA are shown in Figures 5 and 6 for the terrestrial and estuarine ecosystems, respectively.

Anecdotal evidence suggests that releases from the impoundments may have occurred, prior to their closure, as well as direct discharge of wastes into the Intracoastal Waterway during barge cleaning. In general, biota can be exposed to chemical stressors through direct exposure to abiotic media, or through ingestion of forage or prey that have accumulated contaminants. Exposure routes are the mechanisms by which a chemical may enter a receptor's body. Possible exposure routes include 1) absorption across external body surfaces such as cell membranes, skin, integument, or cuticle from the air, soil, water, or sediment; and 2) ingestion of food and incidental ingestion of soil, sediment, or water along with food. Absorption is especially important for microbes, plants, and aquatic animals.

2.4 THREATENED AND ENDANGERED SPECIES

The US Fish and Wildlife Service (USFWS) was consulted (USFWS, 2005b) and information obtained from the USFWS and Texas Parks and Wildlife Department (TPWD) regarding Threatened and Endangered Species. According to USFWS (USFWS, 2005c), Threatened and Endangered Species for Brazoria County include: bald eagle (*Haliaeetus leucocephalus*), brown pelican (*Pelecanus occidentalis*), green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricate*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), piping plover (*Circus melodus*), and whooping crane (*Grus americana*). According to TPWD (TPWD, 2005), Threatened and Endangered Species for Brazoria County include: bald eagle (*Haliaeetus leucocephalus*), black rail (*Laterallus jamaicensis*), eastern brown pelican (*Pelecanus occidentalis occidentalis*), interior least tern (*Sterna antillarum athalassos*), piping plover (*Circus melodus*), reddish egret (*Falco rufescens*), swallow-tailed kite (*Elanoides forficatus*), white-faced ibis (*Plegadis chihi*), wood stork (*Mycteria americana*), and corkwood (*Leitneria floridana*). None of these species have been noted at the Site but they are known to live in or on, feed in or on, or migrate through the Texas Gulf Coast and estuarine wetlands.

2.5 ASSESSMENT AND MEASUREMENT ENDPOINTS

Assessment endpoints are explicit expressions of the ecological resource to be protected (EPA, 1997). Identification of assessment endpoints is necessary to focus the SLERA on more sensitive and ecologically relevant receptors rather than attempting to evaluate risks to all potentially affected ecological receptors. Assessment and measurement endpoints are discussed in relation to the risk question and testable hypotheses for each habitat and receptor group in Tables 18 and 19 (terrestrial and estuarine wetland/aquatic, respectively).

2.5.1 Terrestrial Assessment Endpoints

The terrestrial habitat associated with the Site includes the entire South Area and a small area of land adjacent to Marlin Avenue and near the former impoundments in the North Area. Biota serve as a food source for food chain receptors. The environmental value for this area is related to its ability to support plant communities, soil microbes/detritivores and wildlife. As indicated on Figure 5 and described in Table 18, the assessment endpoints for this area include:

- Vegetation survival, growth, and reproduction are values to be preserved in the terrestrial ecosystem. As food, plants provide an important pathway for energy and nutrient transfer from the soil to herbivores and omnivores as well as invertebrates. Plants also provide critical habitat for terrestrial animals.
- Detritivore survival, growth, and reproduction and function (as a decomposer) are ecological values to be preserved in a terrestrial ecosystem because they provide a mechanism for the physical breakdown of detritus for microbial decomposition (remineralization), which is a vital function.
- Mammalian and avian herbivore and omnivore survival, growth, and reproduction are ecological values to be preserved in a terrestrial ecosystem because they are critical components of local food webs in most habitat types. In addition, small mammal and avian receptors can be important in the dispersal of seeds and the control of insect populations.
- Mammalian, reptilian, and avian carnivore survival, growth, and reproduction are values to be preserved in the terrestrial ecosystem because they provide food to other carnivores, omnivores, scavengers, and microbial decomposers. They also affect the abundance, reproduction, and recruitment of lower trophic levels, such as vertebrate herbivores and omnivores through predation.

2.5.2 Estuarine Wetland and Aquatic Assessment Endpoints

The estuarine wetland habitat for the Site extends over the majority of the North Area while the Intracoastal Waterway (i.e., aquatic habitat) is south of the Site. Wetlands are particularly important habitat because they often act to filter water prior to it going into another water body, they are important nurseries for fish, crab, and shrimp, and they act as natural detention areas to prevent flooding. The environmental value for these areas is related to its ability to support wetland plant communities, microbes/benthos/detritivores and wildlife. As indicated in Figure 6 and described in Table 19, the assessment endpoints for these areas include:

- Wetland vegetation survival, growth, and reproduction are values to be preserved in the estuarine wetland ecosystem. As food, plants provide an important pathway for energy and nutrient transfer from the soil to herbivores and omnivores as well as invertebrates. Plants also provide critical habitat for vertebrates and invertebrates.

- Benthos survival, growth, and reproduction are values to be preserved in estuarine ecosystems because these organisms provide a critical pathway for energy transfer from detritus and attached algae to other omnivorous organisms (e.g., polychaetes and crabs) and carnivorous organisms (e.g., black drum and sandpipers), as well as integrating and transferring the energy and nutrients from lower trophic levels to higher trophic levels. The most important service provided by benthic detritivores is the physical breakdown of organic detritus to facilitate microbial decomposition.
- Zooplankton survival, growth, and reproduction are values to be preserved in estuarine ecosystems. Zooplankton provide a food source for energy transfer through the water column-based pathway from phytoplankton to filter feeding and planktivorous organisms (e.g., finfish, shrimp, clams, worms, and oysters).
- Herbivorous and omnivorous fish and shellfish survival, growth, and reproduction are values to be preserved in estuarine ecosystems because they are critical components of the food web.
- Vertebrate carnivore (i.e., fish, fish-eating, and invertebrate-eating birds) survival, growth, and reproduction are values to be preserved in estuarine ecosystems. Vertebrates provide food for other carnivores and omnivores and affect species composition, recruitment, and abundance of lower trophic level organisms.

Given that the Intracoastal Waterway is a deep, high-energy environment (i.e., dredged regularly) and light penetration is poor due to the high turbidity, submerged aquatic vegetation is not likely to thrive in this area and, as such, is not an ecological resource to be protected as part of this assessment.

2.5.3 Measurement Endpoints

The measurement endpoints for the Site and the Intracoastal Waterway are the measurements of spatial distribution of chemical concentrations in soil and sediment to assess exposure concentrations for potentially exposed receptors. Maximum concentrations of chemicals measured in environmental media were compared to ecological benchmarks for the purposes of the screening-level problem formulation and ecological effects characterization (Step 1) of the SLERA.

2.6 SELECTION OF AND COMPARISON TO ECOLOGICAL BENCHMARKS

This section describes the ecological benchmarks used to evaluate the data initially, and provides a summary of the comparison between site data and the benchmarks. The benchmarks were chosen to conservatively represent the assessment endpoints since they are generally protective of the most sensitive endpoint for a variety of species. This was done as an initial screening in the SLERA process given the large number of analytes, media and receptors analyzed for as part of the RI/FS and evaluated in the SLERA. It should be noted that any chemical considered to be bioaccumulative by the TCEQ (as defined in Table 3-1 of their ecological guidance document (TCEQ, 2006)) was retained for quantitative evaluation in Section 3.0 if it was detected in at least one sample, even if it was reported below a screening criteria or if there was not a screening criteria. This approach was conservatively taken to ensure that food chain effects were considered for bioaccumulative compounds. In addition, polycyclic aromatic hydrocarbons (PAHs) were evaluated as individual compounds, as a total concentration, and grouped as high-molecular weight (HPAH) or low-molecular weight (LPAH) as defined by TCEQ in Box 3-6 of their eco risk guidance (TNRCC, 2001).

2.6.1 Soil

Soil sample data were compared with EPA and TCEQ ecological soil screening values contained in Tables 1 through 5. The EPA soil screening values were obtained from EPA's website at www.epa.gov/ecotox/ecoss/ while the TCEQ values were obtained from Table 3-4 of TCEQ, 2006. The screening value listed is the lowest of the values provided by each Agency for plants, soil invertebrates, avians, and mammals (as indicated with the notation of "p", "i", "a", or "m", respectively).

South Area. Tables 1 and 2 provide a summary of the data for South Area soil samples. Only compounds with measured detections, including "J" flagged (or estimated) data, are listed in these tables. Table 1 contains only surface soil (0 to 0.5 ft bgs) data while Table 2 provides data for both surface and subsurface samples (0.5 ft to 4 ft bgs). This distinction was made to account for the different soil horizons that the different receptors may be exposed. For example, it was assumed that incidental ingestion of soil for the American robin would only occur with the 0 to 0.5 ft bgs soil whereas an earthworm may reasonably be exposed to soil below 0.5 ft bgs as well. At least one sample contained 4,4'-DDT, antimony, arsenic, barium, boron, cadmium, chromium,

cobalt, copper, dieldrin, lead, lithium, manganese, mercury, molybdenum, nickel, strontium, titanium, vanadium, zinc, or HPAHs at a concentration above its ecological benchmark.

Although not reported in any South Area soil sample at a concentration above an ecological benchmark, 4,4'-DDD, 4,4'-DDE, Aroclor-1254, gamma-Chlordane, endrin (aldehyde and ketone) were detected in at least one South Area soil sample and are considered bioaccumulative in soil. These compounds, as well as those compounds with at least one sample concentration exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

North Area. Tables 3 and 4 provide a summary of the data for North Area soil samples. Only compounds with measured detections, including “J” flagged (or estimated) data, are listed in these tables. Table 3 contains only surface soil data while Table 4 provides data for both surface (0 to 9.5 ft bgs) and subsurface samples (0.5 ft to 4 ft bgs). Again, this distinction was made to account for the different soil horizons that the different receptors may be exposed. At least one sample contained antimony, barium, boron, cadmium, chromium, lead, lithium, manganese, molybdenum, vanadium, zinc, or HPAHs at a concentration above its ecological benchmark. Although not reported in any North Area soil sample at a concentration above an ecological benchmark, copper, endrin, endrin ketone, mercury, nickel, Aroclor-1254, 4,4'-DDE, and 4,4'-DDT were detected in at least one North Area soil sample and are considered bioaccumulative in soil. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

Background Soils. Table 5 provides a summary of the data for background soil samples (all surface samples). Only compounds with measured detections, including “J” flagged (or estimated) data, are listed in the table. At least one background sample contained antimony, barium, chromium, lead, lithium, manganese, zinc, or HPAHs at a concentration above its ecological benchmark. Although not reported in any background soil sample at a concentration above the ecological benchmark, cadmium, copper, and mercury were detected in at least one background soil sample and are considered bioaccumulative in soil. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3. It should be noted that boron, strontium, titanium, and vanadium were not analyzed for in the background soils.

2.6.2 Sediment

Sediment sample data were compared with EPA and TCEQ ecological screening values contained in Tables 6 through 9. The sediment screening values were the lower of the benchmark criterion obtained from EPA's ECO Update re: Ecotox Thresholds (EPA, 1996) and the TCEQ's ecological benchmarks listed in Table 3-4 of TCEQ, 2006. The hierarchy for the benchmarks from the Ecotox Thresholds was marine sediment quality criteria, sediment quality benchmark, and effects range low value.

Intracoastal Waterway. Table 6 provides a summary of the data for sediment samples collected in the Intracoastal Waterway adjacent to the Site. Only compounds with measured detections, including "J" flagged (or estimated) data are listed in the table. At least one sample contained 4,4'-DDT, benzo(a)pyrene dibenz(a,h)anthracene, pyrene, or total PAHs at a concentration above its ecological benchmark. Although not reported in any Intracoastal Waterway sediment sample at a concentration above an ecological benchmark, copper, gamma-Chlordane, hexachlorobenzene, mercury, nickel, and zinc were detected in at least one sediment sample and are considered bioaccumulative in sediment. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

Intracoastal Waterway Background. Table 7 provides a summary of the data for sediment samples collected in the Intracoastal Waterway background area. Only compounds with measured detections, including "J" flagged (or estimated) data, are listed in the table. At least one sample contained arsenic or nickel at a concentration above its ecological benchmark. Although not reported in any Intracoastal Waterway background sample at a concentration above an ecological benchmark, copper, 4,4'-DDT, mercury, and zinc were detected in at least one sediment sample and are considered bioaccumulative in sediment. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

Wetlands. Table 8 provides a summary of the data for sediment samples collected in the wetlands area north of Marlin Avenue. Only compounds with measured detections, including "J" flagged (or estimated) data, are listed in the table. At least one sample contained 2-methylnaphthalene, 4,4'-DDT, acenaphthylene, arsenic, benzo(a)anthracene, benzo(a)pyrene,

chrysene, copper, dibenz(a,h)anthracene, endosulfan sulfate, fluoranthene, gamma-chlordane, lead, nickel, phenanthrene, zinc, LPAHs, HPAHs, or total PAHs at a concentration above its ecological benchmark. Although not reported in any wetlands sediment sample at a concentration above an ecological benchmark, cadmium, 4,4'-DDT, endrin (aldehyde and ketone), mercury, and selenium were detected in at least one sediment sample and are considered bioaccumulative in sediment. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

Ponds. Table 9 provides a summary of the data for sediment samples collected in the ponds north of Marlin Avenue. Only compounds with measured detections, including “J” flagged (or estimated) data, are listed in the table. At least one sample contained 4,4'-DDT or zinc at a concentration above its ecological benchmark. Although not reported in any pond sediment sample at a concentration above an ecological benchmark, cadmium, copper, 4,4'-DDD, mercury, and nickel were detected in at least one sediment sample and are considered bioaccumulative in sediment. These compounds, as well as those compounds with measurements exceeding a benchmark, were quantitatively evaluated further in the SLERA as described in Section 3.0.

2.6.3 Surface Water

Surface water samples were compared with TCEQ ecological screening criteria, which were obtained from TCEQ's ecological benchmarks listed in Table 3-2 of TCEQ, 2006. If a TCEQ value was not available, and a value was available in the Screening Quick Reference Tables (or SQuiRTs; Bachman, 2008)), that value was used as the screening criteria. If the benchmark was listed for dissolved concentrations, it was not compared to the total concentration data. It should be noted that dissolved concentrations only apply to metals.

Intracoastal Waterway. Tables 10 and 14 summarize the analytical data for total and dissolved concentrations, respectively, for surface water samples collected from the Intracoastal Waterway adjacent to the Site. Boron concentrations measured in four of four dissolved surface water samples collected exceeded the ecological benchmark available in SQuiRTs (Bachman, 2008). Selenium, which is considered bioaccumulative in water, was measured in four of four surface water samples collected from the Intracoastal Waterway but at concentrations below the benchmark.

Intracoastal Waterway Background. Tables 11 and 15 summarize the analytical data for total and dissolved concentrations, respectively, for surface water samples collected in the Intracoastal Waterway background area, east of the Site and across the Intracoastal Waterway. 4,4'-DDT and dissolved silver were detected in at least one sample in excess of their respective benchmark values. 4,4'-DDD and 4,4'-DDT were detected in two of five and one of five surface water samples collected at the background locations and are considered bioaccumulative although it should be noted that 4,4'-DDD was not measured at a concentration greater than the benchmark. Boron concentrations measured in four of four dissolved surface water samples collected exceeded the ecological benchmark available in SQUIRTs (Bachman, 2008), while iron concentrations measured in one of four dissolved surface water samples collected in the background area for the Intracoastal Waterway exceeded the benchmark.

Wetlands. Tables 12 and 16 summarize the analytical data for total and dissolved concentrations, respectively, for surface water samples collected in the wetlands drainage areas north of Marlin Avenue. Acrolein and dissolved boron, copper, and manganese were detected in at least one sample in excess of their respective benchmark. Mercury, which is considered bioaccumulative, was detected (total concentrations only) in two of four surface water samples but below a benchmark for a dissolved concentration.

Ponds. Tables 13 and 17 summarize the analytical data for total and dissolved concentrations, respectively, for surface water samples collected in the two ponds located in the North Area. Dissolved silver was detected in all six pond surface water samples in excess of its benchmark value. Boron and manganese were measured in at least one dissolved surface water sample at a concentration greater than the benchmark (Bachman, 2008). Thallium, which is considered bioaccumulative, was measured in all three dissolved surface water samples collected from the Small Pond. Selenium, which is also considered bioaccumulative in water, was measured in one total surface water sample collected from the Small Pond. No measured concentrations of selenium or thallium were measured in excess of their benchmarks.

3.0 SCREENING-LEVEL EXPOSURE ESTIMATE AND RISK CALCULATION (STEP 2)

The screening-level exposure and risk calculation description presented in this section of the SLERA corresponds to Step 2 of EPA guidance (EPA, 1997). Step 2 includes an assessment of potential ecotoxicity of stressors and the result of Step 2 is a decision on whether additional ecological risk evaluation is necessary and/or if data gaps exist.

3.1 POTENTIAL RECEPTORS

Several representative groups of wildlife were identified as receptors of concern (ROCs) for use in the SLERA. Each group of receptors represents a group of species (feeding guild) with similar habitat use and feeding habits that could potentially inhabit either the terrestrial, estuarine wetland, or aquatic habitats at the Site. Representative species groups that may use the habitats at the Site are described briefly below. When several species may be present that could represent the feeding guild for a habitat, the species was chosen as the ROC for that feeding guild based on its habitat affinity and potential for exposure.

3.1.1 Terrestrial Receptors

- Detritivores, Invertebrates and Terrestrial Plants. There are limited terrestrial areas at the Site. The earthworm was chosen to represent detritivores and invertebrates for the terrestrial ecosystem in this area because it is a sensitive organism toxicologically and an important part of the food chain as prey for some first-order carnivores.
- Mammalian Herbivores and Omnivores. Habitat type plays a major role in the presence and abundance of the various species of mammals found at the Site. Of the three major groups of mammalian receptors (predators, ungulates, and rodents) potentially found at the Site, the small mammalian rodents are the most diverse and complex, and are most likely to have the highest area use factor. The habitat most likely does not support an ungulate population because it does not provide protective cover that they prefer although they may graze on some of the terrestrial plants on occasion. The omnivorous deer mouse (*Peromyscus maniculatus*) was selected as the ROC for the various feeding guilds of small mammals at the Site. Dietary composition for the deer mouse, with an assumed

area use factor of 100 percent, is assumed to be an equal mix of terrestrial invertebrates and terrestrial plant tissue in order to assess the potential exposures to a receptor ingesting a general mix of prey types at the Site.

- Mammalian Predators. Carnivores potentially present include omnivores such as the spotted and striped skunks and raccoon as well as the coyote (*Canis latrans*). Fecal evidence of a predator species was observed at the Site. Since some of the COPECs are considered bioaccumulative compounds, assessing risks to an upper trophic level receptor is advisable. Therefore, the coyote (*Canis latrans*) was selected as the ROC for the mammalian carnivore feeding guild as it may feed at the Site on occasion as part of its larger home range. An area use factor of 100 percent was conservatively assumed per EPA, 1997.
- Reptilian Predators. A representative reptilian predator for the Site is the rat snake (*Elaphe obsoleta*), which has been observed at the Site. Rat snakes feed primarily on small mammals and eggs. An area use factor of 100 percent was conservatively assumed per EPA, 1997.
- Avian Herbivores and Omnivores. In general, avian species are influenced by the same types of landscape components as mammals, although vegetation is by far the more important factor. Birds are generally less important than mammals in terrestrial risk assessments because they live in less intimate contact with the soil, are highly mobile, and in many cases are present only seasonally. Most small birds have flexible diets that emphasize specific types of plant or animal material during certain seasons and most species are somewhat opportunistic, feeding on whatever food source is most abundant or particularly nutritious/palatable at a given time. A generalized avian receptor, represented by the American robin (*Turdus migratorius*), was selected to represent the omnivorous feeding guild. An area use factor of 100 percent was conservatively assumed per EPA, 1997.
- Avian Predators. Representative avian predators (raptors) for the Site include the red-tailed hawk (*Buteo jamaicensis*) although it has not been observed at the Site. It, however, may use the Site for hunting prey occasionally. They feed primarily on small

rodents, snakes, and lizards although they are opportunistic and will feed on other prey at times. An area use factor of 100 percent was conservatively assumed per EPA, 1997.

3.1.2 Estuarine Wetland and Aquatic Receptors

- Benthos, Zooplankton, and Wetlands Plants. Polychaetes burrow in and ingest sediment and have a greater exposure potential to sediment-bound chemicals than most epibenthos such as shrimp and crab. Polychaetes are likely to be the most abundant class of benthic organisms found in the Intracoastal Waterway and, as such, *Capitella capitata* was chosen to represent this receptor class.
- Fish and Shellfish. Fiddler crabs (*Uca rapax*) and killifish (*Fundulus grandis*) were chosen to represent herbivorous or omnivorous species in the estuarine wetland and aquatic ecosystems, respectively. Fiddler crabs and their burrows are abundant at the Site. They eat detritus (dead or decomposing plant and animal matter) and serve as a food source for many wetland animals. It was assumed that their area use factor is 100 percent. The killifish was chosen to represent this feeding guild because it is likely to be present in the area of the Site and because it is an omnivorous fish that feeds primarily on organic detritus, small crustaceans, zooplankton, epiphytic algae, and polychaetes. Killifish may inhabit the Site for its entire life cycle; therefore, an area use factor of 100 percent was assumed.
- Carnivorous Fish. Black drum (*Pogonias cromis*) was selected as the first order carnivore ROC because it is present in the Intracoastal Waterway and because it is an omnivorous carnivore that eats shrimp, crabs, small fish, benthic worms and algae. Per EPA, 1997, an area use factor of 100 percent was conservatively assumed. The spotted seatrout (*Cynoscion nebulosus*) was chosen to represent a second order carnivorous fish species because it is present in the Intracoastal Waterway and because adult fish feed almost exclusively on other fish. It was conservatively assumed that the area use factor for the spotted seatrout is 100 percent per EPA, 1997.
- Avian Predators. Sandpipers (*Calidris genus*) were chosen as first order avian predator ROC because they have been observed at the Site. Although not observed at the Site, the green heron (*Butorides striatus*) was chosen as the second order avian predator ROC to

assess food chain impacts. Sandpipers are migratory birds that feed on aquatic insects and larva, marine worms, small crabs, small mollusks, and other invertebrate prey items. An area use factor of 100 percent was conservatively assumed per EPA, 1997. Green herons are migratory birds that feed on small fish invertebrates, insects, frogs, and other small animals. Per EPA, 1997, an area use factor of 100 percent was conservatively assumed for green herons as well.

3.2 SCREENING-LEVEL EXPOSURE ESTIMATES

In the exposure analysis, potential exposure of ecological receptors to COPECs is quantified. There are two basic routes of exposure for the COPECs and receptors at the Site: 1) ingestion both from food and soil/sediment; and 2) direct contact. Quantification of exposure potential for both of these exposure routes requires data on chemical concentrations in environmental media (e.g., soil, sediment, prey items) and ingestion rates or contact information for each receptor and pathway. In addition, body weights, home range size, and other factors must be known for each of the receptors, as well as the chemical and physical properties of the COPECs. Ecological receptors based on an ingestion pathway include birds, crustaceans, mammals, and fish. Receptors evaluated based on direct contact, include earthworms in the terrestrial ecosystem and polychaetes and amphipods in the wetlands/aquatic ecosystem.

Tables 20 and 21 provide exposure parameters for each receptor for terrestrial and estuarine wetland/aquatic receptors, respectively. References for the selected values are included in the tables as well.

Exposures via inhalation or dermal absorption were not evaluated for most receptors because of a lack of appropriate exposure and toxicity data and the uncertainty associated with these pathways (TNRCC, 2001). The exposure of animals to contaminants in soil by dermal contact is likely to be small due to barriers of fur, feathers, and epidermis. Therefore, the SLERA focuses on the ingestion pathways as the primary exposure route for most vertebrates (unless direct contact is specifically noted and assessed).

For most receptors evaluated based on ingestion, exposure is quantified by estimating the daily dose (mg COPEC/kg body weight per day) that the receptor is expected to receive. For second order carnivorous fish, mammals, and birds exposed through ingestion, estimates of exposure are

calculated using dietary concentration rather than daily dose. For the direct contact pathway (i.e., earthworm and polychaetes), the COPEC concentration in soil or sediment was used directly to estimate exposure.

EPA guidance (EPA, 1997) suggests conservatively using maximum concentrations in the SLERA, which is often performed when only limited data sets are available. During the scoping meeting with EPA, it was discussed that a 95% upper confidence limit (UCL) on the average concentration would more appropriately represent the exposure point concentration (EPC) given the extensive characterization and sampling that has been conducted at the Site. The general procedure that is recommended by EPA to estimate a 95% UCL (EPA, 2002) was used as the EPC to represent the upper end of exposure. EPA's ProUCL Version 4 program (EPA, 2007) was used to analyze dataset distribution and calculate average and 95% UCL concentrations. ProUCL calculates various estimates of the 95% UCL of the mean, and then makes a recommendation on which one should be selected as the best UCL estimate. If the average or 95% UCL is greater than the maximum detected concentration, the maximum measured concentration was used as the exposure point concentration for the RME evaluation (EPA, 2002).

Appendix A provides the ProUCL output when there were sufficient samples to run statistics (soil and sediment). It should be noted that for avian receptors, the exposure point concentration was based on surface soil data because it is unlikely that the avian ROC is exposed to subsurface soils given their habitat preferences, activities, and feeding behavior. One-half of the sample detection limit was used for samples without a measurement at or above the sample detection limit. Both averages and 95% UCLs were used in the SLERA to provide a range of exposure point concentrations.

The general equation that will be used for estimating COPEC dose from the soil/sediment and food ingestion pathways is presented below:

For a soil and sediment pathway:

$$\text{Dose}_{\text{soil/sediment}} = \frac{C_{\text{soil/sediment}} \times IR_{\text{soil/sediment}} \times AF_{\text{soil/sediment}} \times AUF}{BW}$$

For a food (dose) pathway:

$$\text{Dose}_{\text{food}} = \frac{C_{\text{food}} \times \text{IR}_{\text{food}} \times \text{AUF}}{\text{BW}}$$

Where:

$C_{\text{soil/sediment}}$	=	chemical concentration in soil/sediment (mg/kg)
C_{food}	=	chemical concentration in food (mg/kg)
$\text{IR}_{\text{soil/sediment}}$	=	soil/sediment ingestion rate (kg/day)
IR_{food}	=	food ingestion rate (kg/day)
$\text{AF}_{\text{soil/sediment}}$ (unitless)	=	chemical bioavailability factor from soil/sediment
AUF	=	area-use factor (unitless)
BW	=	wildlife receptor body weight (kg)

It should be noted that the chemical bioavailability factor for all compounds in both soil and sediment was assumed to be 1 (ie., 100% bioavailable for uptake). COPEC concentrations in food were estimated from soil/sediment concentrations using bioaccumulation factors (BAFs) or biota-sediment accumulation factors (BSAFs) with the following equation:

$$C_{\text{food}} = C_{\text{soil/sediment}} \times \text{BAF (or BSAF if sediment)}$$

For those receptors exposure through both soil or sediment and dietary exposure routes, the dose was assumed to be additive with the equation:

$$\text{Dose}_{\text{total}} = \text{Dose}_{\text{soil/sediment}} + \text{Dose}_{\text{food}}$$

Various literature sources, including the Wildlife Exposure Factors Handbook (EPA, 1993), were reviewed to determine the types of prey ingested by the wildlife receptors and the amounts. It was assumed that the deer mouse has incidental soil ingestion only, while the coyote and the red-tailed hawk predominantly have food ingestion with an incidental amount (i.e., 2%) of soil ingestion, and the American robin and rat snake are exposed through both food and soil sources. It was assumed that fiddler crabs, killifish, sandpipers, and black drum are exposed to COPECs

via food and incidental ingestion of sediment while spotted seatrout and green heron are exposed via prey items.

Appendices B through H provide detailed intake (dose) calculations for each media and all receptors. For the purposes of the SLERA, the dose and estimated risks were assumed to be similar for the killifish and black drum due to the similarity in the toxicity reference values used to calculate risk and because they are both omnivores with a varied diet. Since dose is adjusted for body weight, the differences between their food intake and body weight should not mathematically make a difference. In addition, assuming the area use factor for both species is 100% makes the differences between their home ranges negligible for the purposes of the SLERA calculations.

3.3 TOXICITY REFERENCE VALUES

Species-specific toxicity reference values (TRVs) were determined using scientific literature and other available resources with selected benchmarks generally based on measurements of survival growth or reproduction in the laboratory. A TRV was selected from the available scientific literature for each compound using the following criteria (EPA, 1997):

- Doses based on the receptor species selected for evaluation were used preferentially; however, if toxicity information is not available for the species, doses for animals within the same class as the receptor species were used.
- Data for reproductive or developmental effects were used preferentially over other endpoints. Reproductive and developmental effects represent a more sensitive measure of wildlife effects than mortality. Therefore, these effects were chosen in preference to the less sensitive mortality endpoint for assessing ecological risk to the ROCs.
- Chronic data were used preferentially to sub-chronic or acute data, and no observable adverse effects levels (NOAELs) were used in preference to lowest observable adverse effects levels (LOAELs) and effects measurements.

Effects Range Low (ERL) and Effects Range Medium (ERM) values were used as sediment TRVs for benthic receptors. TRVs were not available for each receptor class or for each compound. Where appropriate, surrogate values were used in for some species to species extrapolations and some within some chemical classes (eg., DDT for DDE) for chemicals without

TRVs. Because using surrogate values introduces considerable uncertainty into the risk assessment process, care was taken to only use surrogate values for chemicals with similar chemical structures or toxicities to minimize the uncertainty. The chemicals with no TRVs were discussed in the uncertainty section.

3.4 SCREENING-LEVEL RISK ESTIMATES

The purpose of the risk characterization is to integrate the exposure and ecological effects analyses to determine if ecological receptors at the Site are potentially at risk from chemical exposure. In this section, the dose estimate is compared to the TRV to evaluate the potential for adverse health effects to the ROC using a hazard quotient approach. Hazard quotients (HQs) are calculated to make these comparisons. The HQ is a ration of the estimated exposure concentration to the TRV where:

$$HQ = \text{Dose} / \text{TRV}$$

If the HQ is less than one, indicating the exposure concentration or dose is less than the TRV, adverse effects are considered highly unlikely. If the HQ is equal to or greater than one, a potential for adverse effects may exist. It should be noted that an HQ greater than one by itself does not indicate the magnitude or effect nor does it provide a measure of potential population-level effects (Menzie et al., 1992), and certainly should be evaluated based on the conservative nature of the assumptions. Because of this issue, HQs are calculated using NOAELs and ERLs initially and if the NOAEL-based HQ exceeds one, the HQ was also calculated using a LOAEL and ERM (when available) to provide a range of results to assist with risk management decisions. HQs were calculated for individual polycyclic aromatic hydrocarbons (PAHs) as well as for total PAHs, low-molecular weight PAHs (LPAHs), and high-molecular weight PAHs (HPAHs). PAHs were classified as LPAH or HPAH according to Box 3-6 of TCEQ guidance (TCEQ, 2001).

Tables 22, 23, and 24 provide a summary of the HQs that exceed one per media, receptor and compound for the South and North Areas and Background Areas, respectively. Appendices B through H provide the complete set of calculations for all compounds, while Appendix I provides the risk calculations using LOAELs for a select group of compounds, media and receptors. A discussion of the results for each compound with a HQ greater than one follows by media.

3.4.1 South Area Soil

As shown in Table 22, the NOAEL-based HQs for 4,4'-DDT, antimony, Aroclor-1254, copper, lead, and zinc exceed one for one or more terrestrial receptors. Zinc is the only compound with a LOAEL-based HQ greater than one for the earthworm receptor (the HQ using the average EPC is 0.86; while the HQ using the RME EPC is 1.52). The zinc LOAEL-based HQs for the deer mouse, coyote, rat snake, American robin, and red-tailed hawk receptors are below one.

3.4.2 North Area Soil

As shown in Table 23, the NOAEL-based HQs for antimony, dieldrin, lead, and zinc exceed one for one or more terrestrial receptors. Zinc is the only compound with a LOAEL-based HQ greater than one for the earthworm receptor (the HQ using the average EPC is 0.45; while the HQ using the RME EPC is 3.32), the deer mouse receptor (the HQ using the average EPC is 0.14; while the HQ using the RME EPC is 1.06), and the American robin receptor (the HQ using the average EPC is 0.19; while the HQ using the RME EPC is 1.42). The zinc NOAEL and LOAEL-based HQs for the coyote, rat snake, and red-tailed hawk receptors are below one.

3.4.3 Background Area Soil

As shown in Table 24, the NOAEL-based HQs for antimony, barium, and zinc exceed one for one or more terrestrial receptors. Barium and zinc have a LOAEL-based HQ greater than one for the earthworm receptor (the HQ using the average EPC for barium is 1.01 and 0.46 for zinc; while the HQs using the RME EPCs for barium and zinc are 1.52 and 1.8, respectively). The barium and zinc LOAEL-based HQs for the deer mouse, coyote, rat snake, American robin, and red-tailed hawk receptors are below one.

3.4.4 Intracoastal Waterway Sediment

As shown in Table 22, the ERL-based HQ for 4,4'-DDT, benzo(a)anthracene, dibenz(a,h)anthracene, fluoranthene, fluorene, gamma-chlordane, phenanthrene, pyrene, HPAHs and total PAHs exceed one for the benthic receptor. The ERM-based HQs for the benthic receptor for these compounds were less than one. The only benchmark available for hexachlorobenzene was the Apparent Effects Threshold (AET), and both the average and RME

HQs exceed one for benthic organisms. None of the other NOAEL or LOAEL-based HQs was above one for aquatic or estuarine receptors.

3.4.5 Intracoastal Waterway Background Sediment

As shown in Table 24, none of the NOAEL-based HQs for any compound for any receptor exceeds one. The AET-based HQs for hexachlorobenzene using both the average and RME EPCs exceed one for benthic organisms.

3.4.6 North Area Wetlands Sediment

As shown in Table 23, the ERL-based HQ for many individual PAHs, 4,4'-DDT, endrin aldehyde, gamma-chlordane, LPAH, HPAH, and total PAHs exceed one for the benthic receptor. The AET-based HQs for benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene were 1.11 and 1.28, respectively, for the RME benthic scenario although the HQs for the average scenario were 0.29 and 0.33, respectively. There is not an ERL or ERM for benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene. The ERM-based HQs for dibenz(a,h)anthracene 4.15 for the RME benthic scenario and 0.77 for the average benthic scenario. None of the NOAEL-based HQs exceed one for the aquatic or estuarine receptors.

3.4.7 Pond Sediment

As shown in Table 23, the ERL-based HQ for 4,4'-DDT and zinc exceed one for the benthic receptor while the ERM-based HQs for zinc are 0.81 and 2.44 for the average and RME scenarios, respectively. None of the other compounds measured in pond sediment exceed the ERL-based or ERM-based HQ. None of the LOAEL-based HQs exceed one for the aquatic or estuarine receptors, although NOAEL-based HQs exceed one for copper, nickel, and zinc in the sandpiper and green heron.

3.4.8 Surface Water

As described in Section 2.0, dissolved boron measured in surface water in the Intracoastal Waterway, 4,4'-DDT, and dissolved boron, iron, and silver measured in surface water from the background area of the Intracoastal Waterway, acrolein and dissolved boron, copper, and

manganese measured in surface water from the North Area wetlands, and dissolved boron, manganese, and silver measured in surface water from the ponds located in the North Area exceed their screening level.

A hazard quotient risk approach was not used to evaluate these data given the uncertainty when trying to estimate food chain effects. However, additional evaluation of these compounds, levels measured in surface water at the Site, and other measures of toxicity (ie., the LC₅₀ which represents mortality for 50 percent of the organisms tested under specified conditions) are discussed herein. LC₅₀ data were obtained from EPA's ECOTOX database (EPA, 2009) by compound. Data for studies conducted in marine water were used when available for species that are native to Texas. Only data for tests that were at least 96 hours in duration were used, unless otherwise noted. The lowest LC₅₀ was selected for the most sensitive species (when a difference was observed). When enough data were available, a geometric mean of the dataset was calculated and used for the evaluation.

Additional quantitative evaluation was not conducted for mercury, selenium, or thallium since they were not measured above their respective screening criteria in surface water. Although they are considered bioaccumulative and food chain effects may be of concern, the screening criteria used account for bioaccumulation in their derivation and, as such, comparing site concentrations to these values is adequately protective of food chain effects.

Table 25 summarizes the results of the screening criteria and this risk evaluation. Conclusions of risk based on exceeding screening levels are discussed in more detail in Section 5.0.

Acrolein. Acrolein was measured in one of four surface water samples collected in the wetlands area at a concentration of 0.00929 mg/L. There was one LC₅₀ study conducted in saline water and that was a 96-hour study performed with *Cyprinodon variegatus*, or sheepshead minnow, which is a native species found in Texas. Based on LC₅₀ data obtained from EPA's ECOTOX database (EPA, 2009), the LC₅₀ for this species was 0.43 mg/L.

Boron. The maximum measured concentrations of dissolved boron in surface water collected from the Intracoastal Waterway, the background area of the Intracoastal Waterway, the wetlands area, and the ponds were 4.99, 4.33, 2.75, and 3.33 mg/L, respectively. Based on LC₅₀ data obtained from EPA's ECOTOX database (EPA, 2009), the range of LC₅₀s for the most sensitive

species was 19 to 290 mg/L, with a geometric mean from the twelve tests of 86.5 mg/L. It should be noted that none of the studies available were conducted in saline water, and the test compound was boric acid. The most sensitive species was *Ictalurus punctatus*, or channel catfish and, while the study was conducted using freshwater under laboratory conditions for 120 hours (or more), this species is native to Texas and can live in brackish water.

Copper. The maximum measured concentration of dissolved copper in surface water collected from the wetlands area was 0.011 mg/L. There are numerous LC₅₀ studies for copper in salt water listed on EPA's ECOTOX database (EPA, 2009). Of the several 96-hour tests for species that may be found in Texas, the lowest LC₅₀ was 0.368 mg/L for the *Cyprinodon variegatus*, or sheepshead minnow. The other LC₅₀s ranged from 0.368 mg/L to as high as 8.4 mg/L for the striped bass (*Morone saxatilis*).

4,4'-DDT. DDT was measured in one of four surface water samples collected in the Intracoastal Waterway background area at a concentration of 0.000013 mg/L. There are over 280 LC₅₀ studies listed on EPA's ECOTOX database (EPA, 2009) for DDT, most of which are freshwater studies or salt water studies conducted for less than a 96-hour duration or non-native species. The 96-hour LC₅₀s determined for DDT in saltwater for the Western mosquitofish or *Gambusia affinis*, striped bass or *Morone saxatilis*, and striped killifish or *Fundulus majalis* were 0.00045, 0.00053, or 0.001 mg/L, respectively. All of these species are native to Texas.

Iron. Iron was detected in one for four dissolved surface water samples collected in the Intracoastal Waterway background area at a concentration of 0.06 mg/L. Based on data from EPA's ECOTOX database (EPA, 2009), there were no studies in saline water for aquatic species that are native to Texas. Therefore, LC₅₀ studies conducted on *Ictalurus punctatus* or channel catfish, crayfish, *Gambusia affinis* or Western mosquitofish, and *Morone saxatilis* or striped bass were evaluated to determine a representative LC₅₀ for iron. Upon visual inspection of the data for all tests conducted for 96-hours, it appeared that the striped bass was the more sensitive species since the LC₅₀s were lower by about a factor of two or more when compared to other species. Of the two tests, the LC₅₀ for the lower replicate was 4 mg/L while the higher value was 6 mg/L.

Manganese. The maximum measured concentrations of dissolved manganese in surface water collected in the wetlands area and ponds were 0.33 and 1.06 mg/L. According to data obtained from EPA's ECOTOX database (EPA, 2009), the only LC₅₀ study conducted for manganese or

manganese chloride was a 72-hour test in *Asterias rubens*, or starfish. The LC₅₀ obtained from this study was 50 mg/L while values of 100 and 200 mg/L were obtained for a similar study in starfish but the test durations were less than one day. Manganese chloride LC₅₀s for crayfish in freshwater ranged from 17 to 51 mg/L for studies of 96-hour or greater duration.

Silver. The maximum measured concentrations of dissolved silver in surface water collected from the Intracoastal Waterway background area and the ponds were 0.0058 and 0.0029 mg/L, respectively. All studies that were conducted using saline water used *Cyprinodon variegatus*, or sheepshead minnow, and were of 96 or more hours in duration. Based on LC₅₀ data obtained from EPA's ECOTOX database (EPA, 2009), the range of LC₅₀s was 0.961 to 3.1 mg/L, with a geometric mean from the fourteen tests of 1.45 mg/L. It should be noted that the test compound for these studies was silver chloride. The most sensitive species was *Ictalurus punctatus*, or channel catfish and, while the study was conducted using freshwater under laboratory conditions for 120 hours (or more), this species is native to Texas and can live in brackish water.

4.0 UNCERTAINTY ANALYSIS FOR STEPS 1 AND 2

This section describes the uncertainties associated with the methodology and results of the SLERA. Risk assessments (both ecological and human) necessarily require assumptions and extrapolations within each step of the analysis and this lead to uncertainty in predicted risks. These uncertainties are generally the result of limitations in the available scientific data used in the exposure and risk models as well as their applicability to the Site. Accordingly, the key assumptions and uncertainties are thought to have the greatest influence on the ecological risks predicted for the Site and, as such, they are presented with a qualitative description of how the uncertainty may affect the evaluation and conclusions. This provides the risk manager with the appropriate context for understanding the level of confidence with the risk assessment results.

There are two principle sources of uncertainty – those resulting from natural variability and those resulting from data limitations. Both types of uncertainty are discussed as they relate to the three major steps of the SLERA: exposure assessment, effects characterization, and risk characterization.

4.1 EXPOSURE ANALYSIS UNCERTAINTY

This section primarily focuses on the uncertainties in the exposure analysis resulting from data limitations. There are three general categories of uncertainty that are discussed in this section: general exposure analysis uncertainties, receptor-specific uncertainties (i.e., uncertainties that are related to the receptors evaluated), and chemical specific uncertainties.

4.1.1 General Exposure Analysis Uncertainties

General exposure analysis uncertainties are those components of the exposure analysis that have not been or could not be well characterized for the assessment endpoints evaluated. Due to the conservative nature of the SLERA, however, it is believed that the overall impact of uncertainties related to the exposure analysis result in an overestimate of risk.

Data collected at the Site satisfied the goals described in the Work Plan (PBW, 2006a) and, thus, adequately characterize the Site's nature and extent of contamination. As described in the NEDR (PBW, 2009), hundreds of samples of soil, sediment, and surface water were collected for the

South Area, North Area, Intracoastal Waterway, and background soil, sediment, and surface water locations. Characterization was conducted for the entire Site and continued if a screening level was exceeded.

Overall, the data quality was determined to be of high quality. All data were subjected to a complete validation (per the Project QAPP) and very few of the data for any of the analytes were found to be unusable (ie., “R-flagged”). In instances where data were unusable, the analysis was conducted again and the R-flagged data was unused. Some of the data are qualified (ie., “J-flagged”) as estimated because the measured concentration is above the laboratory detection limit but below the quantitation limit and/or due to minor quality control deficiencies. According to the *Guidance for Data Useability in Risk Assessment (Part A)* (EPA, 1992), data that are qualified as estimated should be used for risk assessment purposes. Data quality will be discussed in greater detail in the RI report.

Because the site characterization was so thorough at the Site and the data of high quality, it is believed that the average and 95% UCL of the mean adequately represent Site concentrations for chronic exposure conditions, such as those assumed in this evaluation, and that little uncertainty was incurred in the assessment due to incomplete site characterization. Organisms with home ranges smaller than the Site such as the earthworm and deer mouse for terrestrial receptors and *capitella capitata* and fiddler crab for aquatic/estuarine receptors may be exposed to a locally higher concentration than the mean or 95% UCL. However, since the assessment endpoint is based on community survival and productivity and not individual survival and productivity, it is acceptable to use summary statistics to represent community risks.

The assumptions regarding ecological exposure on the South Area of the Site pose a highly conservative bias to uncertainty given that it was assumed that wildlife populations use and are exposed to the entire Site, and that these areas provide sufficient cover and/or foraging habitat to support these wildlife populations. The South Area was developed for industrial purposes and lacks the natural vegetative cover characteristic of viable ecological habitat. In many portions of the South Area, ground surface is covered by concrete slabs or the soil has been worked and there is a permeable cover such as gravel and/or oyster shell base that prevent nesting and foraging. It should be noted, however, that there are some grasses and sparse weedy cover than has grown since the operations at the Site have stopped but this is a relatively small area when compared to the approximate 20-acre South Area. The developed and disturbed nature of the habitat at the

South Area was not taken into consideration in the SLERA and, as such, it is very likely that risks are overestimated for all receptors.

The same general uncertainty as described above applies to the risks associated with sediment from the Intracoastal Waterway since the area of the Intracoastal Waterway near the Site does not provide suitable habitat to encourage or keep fish and other ecological receptors at the Site as noted by USFWS (USFWS, 2005a). This fact was noted during the fish sampling program when it took several weeks to catch the required number of fish (27) in the Intracoastal Waterway at the Site using gill nets whereas fish were more plentiful (and thus more readily caught) in the background area that contained a higher quality habitat.

4.1.2 Receptor-Specific Uncertainties

Receptor-specific uncertainties include those parameters in the dose equation that have not been directly measured for receptors at the Site. Receptor-specific uncertainties applicable to both terrestrial and aquatic/estuarine receptors include the body weights and food and soil/sediment ingestion rates used to quantify exposure estimates. Often, the incidental soil/sediment ingestion rate was assumed to be a fraction of dietary intake since an alimentary study was not available to describe soil/sediment ingestion. Additionally, dietary fractions of all receptors were based on either literature data or best professional judgment. Many of the receptors evaluated in the SLERA, such as the deer mouse and American robin, have been fairly well studied so this was not considered a major uncertainty.

Per EPA guidance (EPA, 1997), it was assumed that the area use factor for all receptors was 100% which most likely overestimates exposure and risk for the more mobile receptors such as the red-tailed hawk, coyote, black drum, spotted seatrout, sandpiper, and green heron. The conservatism is compounded with receptors that consume prey items since it was assumed that 100% of their prey comes from the Site as well.

4.1.3 Chemical-Specific Uncertainties

Chemical-specific uncertainties are those factors that are assumed for specific chemicals and generally relate to fate and transport modeling. These uncertainties should be considered in weighing the importance of the predicted risks for that chemical.

Bioaccumulation factors and biota-sediment accumulation factors were selected from available literature as noted in the toxicity tables provided in the appendices. They were not available for several of the compounds, and often the data available is sparse or of unknown quality. This makes assessing food chain effects in the evaluation difficult and sometimes uncertain. When appropriate, surrogate values for different chemicals and/or different receptors were used to allow for risks to be estimated for higher trophic level receptors. This approach imparts uncertainty into the evaluation although it is difficult to discern whether it leads to an over-estimation or under-estimation of potential risks.

Bioavailability was assumed to be 100% per EPA guidance (EPA, 1997) although it is well known that most metals and some organic compounds are less than 100% bioavailable. This assumption leads to an overestimation of risks, which can be significant.

4.2 EFFECTS CHARACTERIZATION UNCERTAINTY

This section describes the assumptions inherent to the use of chemical-specific TRVs for chemicals evaluated in the terrestrial and aquatic/estuarine systems and chemical-specific ERLs/ERMs for chemicals evaluated for sediment-dwelling benthic organisms. PAHs in sediment, as discussed prior, were also evaluated as a class (total PAHs) and subclasses (LPAHs and HPAHs).

Most available toxicity data were for standard laboratory animals or domestic animals such as rats, mice, quail, mallards, trout, and fathead minnows. Thus, these animals were used as surrogates to represent the toxicity of chemicals to site-specific receptors. It is unknown how the sensitivities of these surrogate organisms to toxicants compare to the sensitivities of the wildlife receptors evaluated at the Site. Using surrogate TRVs, therefore, may over- or underestimate toxicity and estimated risk to receptors at the Site.

The lack of screening values and toxicity data for several compounds imparts uncertainty on the evaluation although it is difficult to determine the significance of the uncertainty. It appears, however, that screening values and/or TRVs were available for the more toxic (relatively) and prevalent compounds (both frequency and concentration) at the Site. The exception to this is for surface water. Many compounds measured in surface water did not have screening values so it

was not possible to assess the potential risks for many compounds nor the significance of this minimal evaluation. Many of the compounds measured, however, are naturally occurring and all compounds were measured at relatively low concentrations.

There are uncertainties in the PAH ERLs/ERMs used to assess risk to benthos. These values are based on effects to growth, survival, and/or benthic community indices for (largely) field collected sediments across the United States and should be used only as a screening tool (Long, et al., 1995). The use of field collected sediments imparts uncertainty in the establishment of these screening benchmarks and in any subsequent evaluation of sediment risk using these values because these sediments also contain concentrations of other chemicals that will affect sediment toxicity. The differences between the toxicity observed in the studies used to develop the ERLs/ERMs and site-specific measures of toxicity may be remarkable as observed at several site-specific studies where higher concentrations of PAHs did not result in toxicity (Alcoa, 2000 and Paine, 1996).

The AETs used to characterize risk for hexachlorobenzene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene are based on screening sediment benchmarks developed for Puget Sound using a bivalve study, a microtox assay, and a microtox assay, respectively. Sediment toxicity is highly variable based on local sediment conditions and, therefore, predictions of risk from screening values can vary greatly.

4.3 RISK CHARACTERIZATION UNCERTAINTY

This section discusses uncertainties related to the risk characterization and the methodology used to estimate risk. The most significant general uncertainty associated with risk characterization is how exposure to multiple chemicals was evaluated. Additivity of effects to the various receptors from exposure to the multiple chemicals measured at the Site was not appropriate since these chemicals, for the most part, act via different mechanisms of toxicity. Furthermore, no evidence was found in the scientific literature to suggest that the toxicity of the compounds measured at the Site should be considered additive. Likewise, some metals are antagonistic but these effects were not considered either since the exact mechanisms are not well understood toxicologically nor is there an accepted method for quantifying this type of interaction in the risk assessment.

For PAHs, however, potential effects were assumed to be additive and, as such, risks were estimated for total PAHs, LPAHs, HPAHs, and for individual compounds as well. This multi-pronged evaluation increases the confidence in the risk predictions as it provides for several lines of evidence to draw conclusions.

5.0 SUMMARY AND CONCLUSIONS OF THE SLERA

The SLERA can be used to assess the need and, if required, the level of effort required to conduct a baseline ecological risk assessment, or to determine that no further action is necessary. Furthermore, the SLERA can be used to focus subsequent phases of the investigation by eliminating compounds from further evaluation (EPA, 2001). This section presents the summary and conclusions of the SLERA.

5.1 SUMMARY OF RISK EVALUATION

The ecological risk assessment evaluated the potential for unacceptable risk for terrestrial and aquatic/estuarine receptors as a result of direct (incidental ingestion) and indirect (bioaccumulation/biomagnifications through the food chain) exposure to chemicals measured in soil and sediment at the Site. A summary of all soil and sediment HQs greater than one are provided in Tables 22, 23, and 24 for the South Area, North Area, and Background areas, respectively, while Appendices B through I provide detailed risk characterization calculations for all compounds. A summary of the surface water risk evaluation is provided in Table 25.

5.1.1 Soil and Sediment

Several of the calculations result in an HQ greater than one using the NOAEL or ERL as the TRV, which suggests that there is a possible risk to these receptors via exposure to the compound in the media. The compounds with LOAEL- or ERM-based HQs greater than one are discussed further in this section. Results of the ecological assessment indicate the following:

- The LOAEL-based HQs for zinc in soil from the South Area are 0.81 and 1.52 for the average and RME earthworm receptor scenarios, respectively.
- The LOAEL-based HQs for zinc in soil from the North Area are 0.45 and 3.32 for the average and RME earthworm receptor scenarios, respectively. The LOAEL-based HQs for zinc in soil from the North Area are 0.14 and 1.06 for the average and RME deer mouse receptor scenarios, respectively, and 0.19 and 1.42 for the average and RME American Robin receptor scenarios, respectively.

- The LOAEL-based HQs for zinc in soil from the background area are 0.46 and 1.80 for the average and RME earthworm receptor scenarios, respectively. The LOAEL-based HQs for barium in soil from the background are 1.01 and 1.52 for the average and RME earthworm receptor scenarios, respectively.
- The AET-based HQs for hexachlorobenzene in sediment in the Intracoastal Waterway are 1.67 and 2.10 for the average and RME benthic receptor scenarios, respectively. The AET-based HQs for hexachlorobenzene in sediment from the background location are 2.97 and 3.12 for the average and RME benthic receptor scenarios, respectively.
- The ERM-based HQs for zinc in pond sediment are 0.81 and 2.44 for the average and RME benthic receptor scenarios, respectively.
- The ERM-based HQs for dibenz(a,h)anthracene in sediment from the North Area wetlands are 0.77 and 4.15 for the average and RME benthic receptor scenarios, respectively.

Estimated risks for earthworms from zinc in soils of the South Area, North Area, and background area as well as estimated risks for the benthic receptor from zinc in pond sediment suggest that adverse risks may be possible. It is concluded, however, that based on similar soil zinc concentrations measured at all four areas (South Area soil, North Area soils, background area soils and the Small Pond sediments) and similar estimated risks for these areas, additional investigation and evaluation are not necessary.

Zinc concentrations in soil and/or sediment at the Site and background area may represent natural variation or indicate regionally elevated levels from natural and/or anthropogenic sources. As reported in ATSDR, 2005, zinc is found in soils and surficial material of the US at concentrations between <5 and 2,900 mg/kg (ATSDR, 2005). Zinc is a commonly used metal and most of the produced zinc is used to galvanize steel and iron products to prevent corrosion.

Plate 2 provides surficial zinc concentrations in soil and sediment collected during the RI. Evaluating the zinc data closer shows that, while it is somewhat random, there is also an observable trend of higher concentrations of zinc along Marlin Ave. This holds true when looking at the six pond samples -- zinc concentrations in the Small Pond, which is closer to

Marlin Ave. and is more of a low depression in the earth than a true pond, are much higher than concentrations in the Fresh Water Pond. Likewise, zinc concentrations measured in off-site background samples BSS-1 and BSS-6 were 969 and 890 mg/kg respectively. These data support the conclusion that the zinc measured at the Site may reflect natural variation in an area of regionally elevated zinc. Because of this issue and the similarities in estimated risks associated with zinc at the Site and from the background area, it is concluded that no additional evaluation of zinc is needed.

Hexachlorobenzene measured in sediment of the Intracoastal Waterway near the Site and the background area suggests a possible risk for the benthic receptor. It is concluded that based on similar potential risks between sediments in the Intracoastal Waterway near the Site and the background area, however, that additional investigation and evaluation are not necessary. It should be noted that hexachlorobenzene was measured in one of sixteen sediment samples, and was “J” flagged. It was not measured in the background samples but using the detection limit results in a similar risk estimate.

The ERM-based HQs for dibenz(a,h)anthracene ranged from 0.77 to 4.15 for the average and RME benthic receptor scenarios, respectively, which suggest that adverse benthic risks from sediment in the North Area are possible for the areas. It should be noted, however, that the ERM-based HQs for total PAHs and HPAHs are below one as are the NOAEL-based HQs for the fiddler crab, sandpiper and green heron receptors. Dibenz(a,h)anthracene is not considered bioaccumulative (TCEQ, 2001) and none of the risk estimates for the higher trophic level receptors have HQs greater than one for this compound.

Evaluating dibenz(a,h)anthracene closer reveals that six of forty-nine samples exceeded the TCEQ marine sediment Protective Concentration Limit (PCL) while five of six samples exceeded both the TCEQ second effects level (SEL) for marine sediment and the midpoint of the PCL and SEL. Dibenz(a,h)anthracene was not measured in the other forty-three samples above the sample detection limit. The skewness of the dataset was impacted by these six samples and the forty-three non-detects, and was significant enough to influence ProUCL to recommend using a 99% Chebyshev value as the EPC. When the geometric standard deviation and variability are relatively high, a 99% Chebyshev UCL is recommended, which is considerably more conservative than the 95% UCL. Therefore, the RME risk estimate accounts for this variability and likely overestimates risk for the majority of the Site.

As noted in Section 2.0, there are no indications that the benthic community in these six locations is stressed or has been impacted by the dibenz(a,h)anthracene or other compounds present in the sediment. Based on this weight of evidence, it is unlikely that localized concentrations of dibenz(a,h)anthracene have an appreciable, adverse ecological effect on the benthic community of the North Area wetlands. It is unclear why the toxicity value for this compound is significantly lower than the benchmarks derived for the structurally similar PAHs but it is clear that this low value significantly impacts the perception of risk and should be taken in context with other benchmarks.

5.1.2 Surface Water

Several conclusions can be made in regards to surface water sampled at the Site. Surface water sampled near the Site in the Intracoastal Waterway did not have measured concentrations in excess of screening values, except for dissolved boron, whereas dissolved boron, iron, and silver, and 4,4'-DDT were measured in at least one surface water sample collected at the background location that did exceed screening levels. More compounds were measured in the samples collected from the background location than near the Site although the concentrations for those compounds measured at both areas were generally similar. Dissolved boron and silver concentrations measured in the ponds were less than that measured in surface water collected from the background area of the Intracoastal Waterway. Dissolved manganese was measured in pond surface water at a concentration greater than the benchmark. Dissolved boron, copper, and manganese, and acrolein were measured in excess of their screening criteria in one sample of surface water collected in the wetlands of the North Area.

All of the concentrations of compounds measured in surface water were well below the reported LC₅₀s, in all cases by more than an order of magnitude and sometimes several orders of magnitude. While it is difficult to determine the significance of these screening level comparisons since many occur in background areas, it is unlikely that adverse ecological effects are occurring due to Site-related chemicals measured in surface water at the Site.

5.2 SELECTION OF COPECS FOR FURTHER EVALUATION

Identification of COPECs for the baseline ecological risk assessment (BERA) is one of the primary objectives of the SLERA. While some compounds in some media provide risk estimates above a hazard quotient of one and/or exceeded screening criteria, further evaluation of these compounds in a baseline ecological risk assessment is not recommended. Much of this evaluation has relied on the use of screening criteria, which are derived to avoid underestimating risk. Requiring a cleanup based solely on a comparison to a screening level type of analysis is not technically defensible (EPA, 1997). In addition, the risk estimates quantified in this report were based on conservative assumptions that, given uncertainty, were purposefully chosen to err on the side of conservatism and not underestimate risk. The weight of evidence conclusion for the SLERA is summarized below.

Zinc concentrations and estimated risks were similar between background areas and the Site. While several of the risk estimates suggest that adverse risks may be possible (eg., North Area soil, background soil, wetlands sediment, very few of the LOAEL-based HQs are much greater than one. The highest estimated risk from zinc (2.44 for the RME scenario and 0.81 for the average) was the ERM-based HQ for *Capitella capitata* in the ponds, specifically the Small Pond. As noted earlier, this pond is essentially dry during the summer months. The maximum measured concentration detected in pond sediment was 999 mg/kg which is similar to background soil concentrations and less than the terrestrial portion of the North Area. Even though concentrations of zinc in soil in the North Area are higher than the pond sediment, risks are less for zinc in soil because the TRV for soil is higher than the sediment value.

Hazard quotients for dibenz(a,h)anthracene and other PAHs in South Area and background area soils, and pond and Intracoastal Waterway (near the Site and background) sediment samples are below one. The ERM-based HQs for dibenz(a,h)anthracene ranged from 0.77 to 4.15 for the average and RME benthic receptor scenarios, respectively, which suggest that adverse benthic risks from sediment in the North Area may be possible for the areas with above-average concentrations. The ERM-based HQs for total PAHs and HPAHs are below one as are the NOAEL-based HQs for the fiddler crab, sandpiper and green heron receptors. A closer look at the dibenz(a,h)anthracene data shows that it was measured in six of forty-nine samples, all above the ERL screening level with five exceeding the ERM. Dibenz(a,h)anthracene is not considered bioaccumulative (TCEQ, 2001) and none of the risk estimates for the higher trophic level receptors have HQs greater than one for this compound. So, while localized adverse effects may be possible at the sampling locations that exceed the screening criteria, it is unlikely that adverse

risks are present for the benthic community of the North Area wetlands, which is roughly 15 acres in size and is part of a wetlands system that covers hundreds of acres.

Because none of the compounds measured in Site soils, sediment or surface water pose an adverse ecological risk, no compounds have been identified as COPECs for further evaluation in a BERA.

5.3 SCIENTIFIC MANAGEMENT DECISION POINT

The SLERA concludes with a SMDP and the three possible decisions at this point according to EPA (EPA, 1997) are:

1. There is adequate information to conclude that ecological risks are negligible and therefore no need for remediation on the basis of ecological risk;
2. The information is not adequate to make a decision at this point, and the ecological risk assessment process will continue to Step 3; or
3. The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted (ie., continue to Step 3).

Based on the results of the SLERA, additional data are not needed to better characterize the nature and extent of contamination and potential risks associated with the Site. Given the conservative evaluation and the conclusions of the SLERA presented herein, compounds measured in Site soil, sediment and surface water are not likely to pose an adverse risk. As such, additional characterization of ecological risks and remediation are not recommended for this Site.

6.0 REFERENCES

- Agency for Toxic Substances and Disease Registry (ATSDR). 2005. *Toxicological Profile for Zinc*. U.S. Department of Health and Human Services. Public Health Service. August.
- Alcoa, 2000. *Final Baseline Risk Assessment Report. Alcoa (Point Comfort)/Lavaca Bay Superfund Site*. May.
- Buchman, M.F., 2008. NOAA Screening Quick Reference Tables (SQuiRTs). NOAA OR&R Report 08-1, Seattle, WA. Office of Response and Restoration Division. National Atmospheric Administration. 34 pages.
- Cammen, L. 1979. "Ingestion Rate: An Empirical Model for Aquatic Deposit Feeders and Detritivores." *Oecologia*. 44:303-310.
- Dunning, Jr., JB. 1993. *CRC Handbook of Avian Body Masses*. CRC Press, Inc.: Boca Raton, Florida.
- Kent, DM. 1986. "Behavior, habitat use, and food of three egrets in a marine habitat." *Colonial Waterbirds*. 9:25-30.
- Long, ER, MacDonald, DD, Smith, SL, and FD Calder. 1995. "Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments." *Environmental Management*. Vol. 19, No. 1, pp. 81-97.
- Neill, 1998. Personal communication on March 13, 1998 as contained in Alcoa, 2000.
- Menzie, CA, DE Burmaster, JS Freshman, and CA Callahan, 1992. Assessment of methods for estimating ecological risk in the terrestrial component: A case study at the Baird and McGuire Superfund Site in Holbrook, Massachusetts. *Environ. Toxicol. Chem.* 11: 245-260.
- Paine, MD, Chapman, PM, Allard, PJ, Murdoch, MH, and D Minifie. 1996. "Limited bioavailability of sediment PAH near an aluminum smelter: contamination does not equal effects." *Environ. Toxicol. And Chem.* 15:2003-2018.
- Pastor, Behling & Wheeler, LLC (PBW), 2005. *Final Screening-Level Ecological Risk Assessment*, Gulfco Marine Maintenance Site, Freeport, Texas. November 17.
- Pastor, Behling & Wheeler, LLC (PBW), 2006a. *Remedial Investigation/Feasibility Study (RI/FS) Work Plan*, Gulfco Marine Maintenance Site, Freeport, Texas. March 14.
- Pastor, Behling & Wheeler, LLC (PBW), 2006b. *Final Sampling and Analysis Plan – Volume I Field Sampling Plan*, Gulfco Marine Maintenance Site, Freeport, Texas. March 14.
- Pastor, Behling & Wheeler, LLC (PBW), 2006c. *Final Sampling and Analysis Plan – Volume II Quality Assurance Project Plan*, Gulfco Marine Maintenance Site, Freeport, Texas. March 14.
- Pastor, Behling & Wheeler, LLC (PBW), 2009. Nature and Extent Data Report.

Texas Commission on Environmental Quality (TCEQ), 2001. *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas*. RG-263 (Revised). Toxicology and Risk Assessment Section. December.

Texas Commission on Environmental Quality (TCEQ), 2006. *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas*. RG-263 (Revised). Remediation Division. January.

Texas Department of State Health Services (TDSHS), 2005. Services Seafood and Aquatic Life Group. On-line database and maps showing shellfish harvesting bans and fish consumption advisories and bans. www.tdh.state.tx.us/bfds/ssd/ .

Texas Natural Resource Conservation Commission (TNRCC), 2001. *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas*. RG-263 (revised). December.

Texas Parks and Wildlife Department (TPWD), 2005. Online database with endangered species listing. www.tpwd.state.tx.us/huntwild/wild/species/?c=endangered.

Texas State Historical Association (TSHA), 2005. The Handbook of Texas On-Line. www.tsha.utexas.edu/handbook/online/articles/GG/rrg4.html .

United States Department of Agriculture (USDA), 1981. *Soil Survey of Brazoria County, Texas*. Soil Conservation Service in cooperation with the Brazoria County Commissioners Court and Texas Agricultural Experiment Station. June.

United States Environmental Protection Agency (EPA), 1992b. *Guidance for Data Usability in Risk Assessment (Part A)*. Final. Office of Emergency Planning and Remedial Response. 9285.7-09A. April.

United States Environmental Protection Agency (EPA), 1993. *Wildlife Exposure Factors Handbook, Volume I of II*. Office of Research and Development. EPA/600/R-93/187a.

United States Environmental Protection Agency (EPA), 1996. *ECO Update. Ecotox Thresholds*. Office of Solid Waste and Emergency Response. EPA 540/F-95/038. January.

United States Environmental Protection Agency (EPA), 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final*. Solid Waste and Emergency Response. OSWER 9285.7-25. EPA 540-R-97-006. June.

United States Environmental Protection Agency (EPA), 1999. *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. Office of Solid Waste and Emergency Response. EPA530-D-99-001A. August.

United States Environmental Protection Agency (EPA), 2000. *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins*. EPA Region 4, originally published November 1995, Website version last updated May 2000: <http://www.epa.gov/region4/waste/oftecser/healthbul.htm>

United States Environmental Protection Agency (EPA), 2001. *ECO Update. Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk*

Assessments. Office of Solid Waste and Emergency Response. Publication #9345.0-14. EPA 540/F-01/014. June.

United States Environmental Protection Agency (EPA), 2002. *Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites*. Office of Emergency and Remedial Response. Washington, D.C. 20460. OSWER 9285.6-10. December.

United States Environmental Protection Agency (EPA), 2003. *Guidance for Developing Ecological Soil Screening Levels*. OSWER Directive 9285.7-55. November.

United States Environmental Protection Agency (EPA), 2007. *ProUCL Version 4.0 User Guide*. Office of Research and Development. National Exposure Research Laboratory. Environmental Sciences Division. Technology Support Center. Characterization and Monitoring Branch. EPA/600/R-07/038. April.

United States Environmental Protection Agency (EPA), 2009. Online EcoTox database with toxicity data. <http://www.epa.gov/ecotox>

United States Fish and Wildlife Service (USFWS), 2005a. Memorandum to Gary Miller from Barry Forsythe Re: Site visit trip report, Gulfco Marine Maintenance Site. June, 13, 2005.

United States Fish and Wildlife Service (USFWS), 2005b. Telephone Communication with Edith Erfling. November 10, 2005.

United States Fish and Wildlife Service (USFWS), 2005c. Online database with endangered species listing. <http://www.fws.gov/ifw2es/endangeredspecies/lists/ListSpecies.cfm>

APPENDIX A
PRO UCL OUTPUT

APPENDIX B
ECOLOGICAL RISK CALCULATIONS FOR SOUTH AREA SOIL

APPENDIX C
ECOLOGICAL RISK CALCULATIONS FOR NORTH AREA SOIL

APPENDIX D
ECOLOGICAL RISK CALCULATIONS FOR BACKGROUND SOIL

APPENDIX E
ECOLOGICAL RISK CALCULATIONS FOR INTRACOASTAL WATERWAY
SEDIMENT

APPENDIX F
ECOLOGICAL RISK CALCULATIONS FOR INTRACOASTAL WATERWAY
BACKGROUND SEDIMENT

APPENDIX G
ECOLOGICAL RISK CALCULATIONS FOR WETLAND SEDIMENT

APPENDIX H
ECOLOGICAL RISK CALCULATIONS FOR POND SEDIMENT

APPENDIX I
ECOLOGICAL RISK CALCULATIONS USING LOAELS

APPENDIX J
REFERENCES FOR THE APPENDICES

TABLE 1
EXPOSURE POINT CONCENTRATION (mg/kg)
SOUTH AREA SURFACE SOIL*

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark ⁽¹⁾	EPA Ecological Screening Level ⁽²⁾	95% UCL	Statistic Used ⁽³⁾	# of Detects/# of Samples
2-Methylnaphthalene	0.0293	0.501	0.0106	---	---	0.0784	97.5% Chebyshev	22 of 83
4,4'-DDD	0.0007894	0.0243	0.00264	---	---	0.0029	97.5% Chebyshev	5 of 83
4,4'-DDE	0.0019	0.0693	0.000428	---	---	0.0074	97.5% Chebyshev	17 of 83
4,4'-DDT	0.0038	0.0625	0.000281	---	0.021 (m)	0.014	99% Chebyshev	37 of 83
Acenaphthene	0.0595	1.69	0.0113	20 (p)	---	0.197	97.5% Chebyshev	26 of 83
Acenaphthylene	0.0382	0.935	0.0184	---	---	0.113	97.5% Chebyshev	19 of 83
Aluminum	5335	15200	414	---	---	5946	95% Student's-t	83 of 83
Anthracene	0.0961	2.46	0.0112	---	---	0.297	97.5% Chebyshev	37 of 83
Antimony	1.118	5.14	0.2	5 (p)	0.27 (m)	1.959	97.5% Chebyshev	72 of 83
Aroclor-1254	0.137	7.98	0.00334	---	---	0.726	97.5% Chebyshev	13 of 85
Arsenic	3.735	24.3	0.26	18 (p)	18 (p)	4.535	95% Approx. Gamma	71 of 83
Barium	345.2	2180	18.6	330 (i)	330 (i)	415.1	95% H-UCL	83 of 83
Benzo(a)anthracene	0.345	5.02	0.0286	---	---	1.211	99% Chebyshev	30 of 83
Benzo(a)pyrene	0.457	4.57	0.0103	---	---	1.457	99% Chebyshev	65 of 83
Benzo(b)fluoranthene	0.582	5.42	0.0408	---	---	1.638	95% H-UCL	61 of 83
Benzo(g,h,i)perylene	0.324	4.24	0.00989	---	---	1.095	99% Chebyshev	51 of 83
Benzo(k)fluoranthene	0.24	4.25	0.0195	---	---	0.651	97.5% Chebyshev	33 of 83
Beryllium	0.408	4.6	0.014	10 (p)	21 (m)	0.487	95% Approx. Gamma	82 of 83
Boron	4.662	54.4	2.43	0.5 (p)	---	9.663	97.5% Chebyshev	34 of 83
Butyl Benzyl Phthalate	0.0187	0.297	0.0129	---	---	0.0373	95% Chebyshev	6 of 83
Cadmium	0.464	9.71	0.023	32 (p)	0.36 (m)	1.71	99% Chebyshev	50 of 83
Carbazole	0.0612	1.54	0.0104	---	---	0.193	97.5% Chebyshev	29 of 83
Chromium	16.08	136	3.37	0.4 (i)	26 (a)	17.45	95% H-UCL	83 of 83
Chrysene	0.409	4.87	0.00932	---	---	1.322	99% Chebyshev	56 of 83
Cobalt	3.705	16	0.049	13 (p)	13 (p)	4.781	95% Chebyshev	82 of 83
Copper	27.98	216	1.55	61 (i)	28 (a)	32.45	95% H-UCL	83 of 83
Dibenz(a,h)anthracene	0.155	1.64	0.0639	---	---	0.363	97.5% Chebyshev	36 of 83
Dibenzofuran	0.0378	0.821	0.0167	---	---	0.111	97.5% Chebyshev	17 of 83
Dieldrin	0.000997	0.0205	0.000243	---	0.0049 (m)	0.003	97.5% Chebyshev	21 of 83
Di-n-butyl Phthalate	0.048	0.753	0.0368	200 (p)	---	0.0967	95% Chebyshev	9 of 83
Endosulfan Sulfate	0.002	0.0713	0.000456	---	---	0.0077	97.5% Chebyshev	17 of 83
Endrin Aldehyde	0.0023	0.0738	0.000497	---	---	0.0084	97.5% Chebyshev	22 of 83
Endrin Ketone	0.0016	0.02	0.000469	---	---	0.004	97.5% Chebyshev	18 of 83
Fluoranthene	0.799	14.2	0.0133	---	---	2.656	95% H-UCL	59 of 83
Fluorene	0.0515	1.11	0.00945	30 (i)	---	0.155	97.5% Chebyshev	28 of 83
gamma-Chlordane	0.00082679	0.0156	0.00071	---	---	0.0025	97.5% Chebyshev	8 of 83
Indeno(1,2,3-cd)pyrene	0.47	6.49	0.0634	---	---	1.115	97.5% Chebyshev	63 of 83
Iron	16285	77100	3450	---	---	17845	95% H-UCL	83 of 83
Lead	69.61	643	2.82	120 (p)	11 (a)	84.5	95% H-UCL	83 of 83
Lithium	7.856	28	0.65	2 (p)	---	9.055	95% Approx. Gamma	83 of 83
Manganese	257.4	892	59.3	500 (p)	220 (p)	281.1	95% Student's-t	83 of 83
Mercury	0.0227	0.66	0.0032	0.1 (i)	---	0.0254	95% H-UCL	37 of 83
Molybdenum	1.306	8.42	0.098	2 (p)	---	1.645	95% Approx. Gamma	71 of 83
Nickel	11.64	36.7	2.84	30 (p)	38 (p)	12.54	95% Approx. Gamma	83 of 83
Phenanthrene	0.512	12.6	0.0139	---	---	2.198	99% Chebyshev	57 of 83
Pyrene	0.533	8.47	0.0121	---	---	1.366	95% H-UCL	57 of 83
Strontium	70.61	527	16.5	---	---	101.2	95% Chebyshev	83 of 83
Tin	0.611	4.95	0.52	50 (p)	---	0.991	95% Chebyshev	23 of 83
Titanium	29.8	645	11.5	---	---	63	95% Chebyshev	83 of 83
Vanadium	13.76	45.6	5.42	2 (p)	7.8 (a)	14.84	95% Approx. Gamma	83 of 83
Zinc	601.2	4770	12.3	120 (i)	46 (a)	727.7	95% Approx. Gamma	83 of 83
LPAH	0.7866	19.296	0.07485	---	29 (i)	3.0384		
HPAH	4.314	59.17	0.27111	---	1.1 (m)	12.874		
Total PAH	5.1006	78.466	0.34596	---	---	15.9124		

Notes:

* Surface soil was collected from 0 to 0.5 ft. below ground surface.

+ Chemicals of interest are any chemical measured in at least one sample at a frequency of detection greater than five percent.

(1) - From Table 3-4 of TCEQ, 2006.

(2) - From www.epa.gov/ecotox/ecossl.

(3) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(a) - avian

(i) - soil invertebrate

(m) - mammal

(p) - plant

TABLE 2
EXPOSURE POINT CONCENTRATION (mg/kg)
SOUTH AREA SOIL*

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark ⁽¹⁾	EPA Ecological Screening Level ⁽²⁾	95% UCL	Statistic Used ⁽³⁾	# of Detects/# of Samples
1,3,5-Trimethylbenzene	0.099	4.36	0.000267	---	---	0.532	97.5% Chebyshev	9 of 83
2-Butanone	0.00412	0.0226	0.000992	---	---	0.00925	97.5% Chebyshev	4 of 83
2-Hexanone	0.00406	0.0207	0.00109	---	---	0.0164	97.5% Chebyshev	8 of 83
2-Methylnaphthalene	0.0698	7.21	0.0106	---	---	0.341	97.5% Chebyshev	32 of 166
4,4'-DDD	0.00766	1.12	0.000369	---	---	0.0498	97.5% Chebyshev	21 of 166
4,4'-DDE	0.0017	0.0693	0.000428	---	---	0.0054	97.5% Chebyshev	22 of 166
4,4'-DDT	0.0037	0.113	0.000281	---	0.021 (m)	0.0125	99% Chebyshev	68 of 166
Acenaphthene	0.0419	1.69	0.0113	20 (p)	---	0.115	97.5% Chebyshev	35 of 166
Acenaphthylene	0.042	1.2	0.0172	---	---	0.114	97.5% Chebyshev	37 of 166
Acetone	0.0145	0.16	0.031	---	---	0.0491	99% Chebyshev	10 of 83
Aluminum	6452	15700	414	---	---	6914	95% Student's-t	166 of 166
Anthracene	0.0874	2.46	0.0112	---	---	0.21	97.5% Chebyshev	65 of 166
Antimony	1.023	5.51	0.2	5 (p)	0.27 (m)	1.576	97.5% Chebyshev	144 of 166
Aroclor-1254	0.205	11.5	0.00334	---	---	0.74	97.5% Chebyshev	25 of 170
Arsenic	3.331	24.3	0.23	18 (p)	18 (p)	4.916	97.5% Chebyshev	139 of 166
Barium	237.4	2180	18.6	330 (i)	330 (i)	330.4	95% Chebyshev	166 of 166
Benzene	0.004	0.0221	0.000339	---	---	0.0065	97.5% Chebyshev	72 of 83
Benzo(a)anthracene	0.268	5.02	0.0118	---	---	0.859	99% Chebyshev	44 of 166
Benzo(a)pyrene	0.347	4.88	0.00999	---	---	1.008	99% Chebyshev	113 of 166
Benzo(b)fluoranthene	0.466	5.97	0.0408	---	---	1.256	99% Chebyshev	102 of 166
Benzo(g,h,i)perylene	0.251	4.24	0.00989	---	---	0.545	97.5% Chebyshev	81 of 166
Benzo(k)fluoranthene	0.157	4.25	0.0158	---	---	0.378	97.5% Chebyshev	45 of 166
Beryllium	0.465	4.6	0.014	10 (p)	21 (m)	0.668	97.5% Chebyshev	165 of 166
Boron	4.811	54.4	2.43	0.5 (p)	---	7.387	97.5% Chebyshev	72 of 166
Butyl Benzyl Phthalate	0.0203	0.617	0.0129	---	---	0.0392	95% Chebyshev	10 of 166
Cadmium	0.335	9.71	0.023	32 (p)	0.36 (m)	0.751	97.5% Chebyshev	93 of 166
Carbazole	0.0459	1.54	0.0104	---	---	0.118	97.5% Chebyshev	42 of 166
Carbon Disulfide	0.0012	0.028	0.000987	---	---	0.004	97.5% Chebyshev	13 of 83
Chromium	13.53	136	2.03	0.4 (i)	26 (a)	17.75	95% Chebyshev	166 of 166
Chrysene	0.327	4.87	0.00901	---	---	0.938	99% Chebyshev	93 of 166
Cobalt	4.144	16	0.049	13 (p)	13 (p)	4.407	95% Student's-t	165 of 166
Copper	24.26	487	0.13	61 (i)	28 (a)	46.92	97.5% Chebyshev	164 of 166
Cyclohexane	0.266	21.7	0.000626	---	---	1.898	97.5% Chebyshev	47 of 83
Dibenz(a,h)anthracene	0.113	1.64	0.0619	---	---	0.236	97.5% Chebyshev	56 of 166
Dibenzofuran	0.0309	0.821	0.0167	---	---	0.0709	97.5% Chebyshev	23 of 166
Dieldrin	0.00090075	0.0205	0.000243	---	0.0049 (m)	0.0021	97.5% Chebyshev	33 of 166
Di-n-butyl Phthalate	0.0391	0.753	0.0311	200 (p)	---	0.0657	95% Chebyshev	11 of 166
Endosulfan Sulfate	0.0013	0.0713	0.0713	---	---	0.0042	97.5% Chebyshev	21 of 166
Endrin Aldehyde	0.0019	0.0738	0.000497	---	---	0.0055	97.5% Chebyshev	31 of 166
Endrin Ketone	0.0013	0.02	0.000469	---	---	0.0029	97.5% Chebyshev	25 of 166
Ethylbenzene	0.0038	0.105	0.000654	---	---	0.0127	97.5% Chebyshev	47 of 83
Fluoranthene	0.594	14.2	0.0133	---	---	1.886	99% Chebyshev	96 of 166
Fluorene	0.0442	1.11	0.00945	30 (i)	---	0.107	97.5% Chebyshev	41 of 166
gamma-Chlordane	0.00069043	0.0156	0.00071	---	---	0.0017	97.5% Chebyshev	12 of 166
Indeno(1,2,3-cd)pyrene	0.368	6.49	0.0574	---	---	0.761	97.5% Chebyshev	104 of 166
Iron	14277	77100	2410	---	---	17453	95% Chebyshev	166 of 166
Isopropylbenzene (cumene)	0.831	64.9	0.000318	---	---	8.618	99% Chebyshev	16 of 83
Lead	53.52	702	2.48	120 (p)	11 (a)	104	97.5% Chebyshev	166 of 166
Lithium	10.03	28.6	0.65	2 (p)	---	12.17	95% Chebyshev	166 of 166
m,p-Xylene	0.0347	2.56	0.000558	---	---	0.227	97.5% Chebyshev	53 of 83
Manganese	261.2	892	59.3	500 (p)	220 (p)	277.5	95% Student's-t	166 of 166
Mercury	0.0262	0.85	0.0026	0.1 (i)	---	0.0718	97.5% Chebyshev	73 of 166
Methylcyclohexane	0.0369	2.73	0.000223	---	---	0.242	97.5% Chebyshev	57 of 83
Molybdenum	0.89	10.4	0.088	2 (p)	---	1.61	97.5% Chebyshev	118 of 166
Naphthalene	0.323	19.2	0.00482	---	---	2.775	99% Chebyshev	8 of 83
Nickel	11.74	36.7	2.7	30 (p)	38 (p)	12.37	95% Student's-t	166 of 166
n-Propylbenzene	0.0237	1.8	0.00023	---	---	0.159	97.5% Chebyshev	14 of 83
o-Xylene	0.0132	0.84	0.000223	---	---	0.077	97.5% Chebyshev	32 of 83
Phenanthrene	0.401	12.6	0.0136	---	---	1.349	99% Chebyshev	95 of 166
Pyrene	0.432	8.47	0.0121	---	---	1.29	99% Chebyshev	98 of 166
Strontium	75.61	591	16.5	---	---	100.6	95% Chebyshev	166 of 166
Tin	0.616	6.48	0.52	50 (p)	---	0.91	95% Chebyshev	40 of 166
Titanium	25.77	645	4.02	---	---	32.21	95% Student's-t	166 of 166
Toluene	0.00574	0.0192	0.000721	---	---	0.0137	97.5% Chebyshev	69 of 83
Vanadium	14.4	45.6	4.73	2 (p)	7.8 (a)	15.17	95% Approx. Gamma	166 of 166
Xylene (total)	0.0479	3.4	0.000777	---	---	0.304	97.5% Chebyshev	53 of 83
Zinc	433.8	7650	6.17	120 (i)	46 (a)	815.2	97.5% Chebyshev	166 of 166
HPAH	1.0093	45.47	0.07817	---	29 (i)	5.011		
HPAH	3.323	60.03	0.24199	---	1.1 (m)	9.157		
Total PAH	4.3323	105.5	0.32016	---	---	14.168		

Notes:

* Soil was collected from 0 to 4 ft. below ground surface.

* Chemicals of interest are any chemical measured in at least one sample at a frequency of detection greater than five percent.

(1) - From Table 3-4 of TCEQ, 2006.

(2) - From www.epa.gov/ecotox/ecossl.

(3) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(a) - avian

(i) - soil invertebrate

(m) - mammal

(p) - plant

**TABLE 3
EXPOSURE POINT CONCENTRATION (mg/kg)
NORTH AREA SURFACE SOIL***

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark ⁽¹⁾	EPA Ecological Screening Level ⁽²⁾	95% UCL	Statistic Used ⁽³⁾	# of Detects/# of Samples
2-Methylnaphthalene	0.0123	0.053	0.01	---	---	0.0275	95% Chebyshev	3 of 18
4,4'-DDE	0.0011	0.0149	0.00216	---	---	0.0093	99% Chebyshev	2 of 18
4,4'-DDT	0.0012	0.0108	0.000597	---	0.021 (m)	0.0073	99% Chebyshev	7 of 18
Acenaphthene	0.0161	0.157	0.021	20 (p)	---	0.0528	95% Chebyshev	2 of 18
Acenaphthylene	0.0099	0.0555	0.0555	---	---	0.0234	95% Chebyshev	1 of 18
Aluminum	10673	16800	1810	---	---	12185	95% Student's-t	18 of 18
Anthracene	0.0257	0.264	0.00887	---	---	0.168	99% Chebyshev	4 of 18
Antimony	1.744	8.09	1.66	5 (p)	0.27 (m)	6.777	99% Chebyshev	9 of 18
Aroclor-1254	0.0037	0.0122	0.0122	---	---	0.0077	95% Chebyshev	1 of 18
Arsenic	2.522	5.69	0.54	18 (p)	18 (p)	2.999	95% Student's-t	17 of 18
Barium	145.2	476	46.1	330 (i)	330 (i)	264.2	95% Chebyshev	18 of 18
Benzo(a)anthracene	0.0715	1.18	1.18	---	---	0.72	99% Chebyshev	1 of 18
Benzo(a)pyrene	0.114	1.42	0.0135	---	---	0.888	99% Chebyshev	7 of 18
Benzo(b)fluoranthene	0.146	1.62	0.0487	---	---	0.352	95% Adjusted Gamma	8 of 18
Benzo(g,h,i)perylene	0.132	1.28	0.0237	---	---	0.842	99% Chebyshev	10 of 18
Benzo(k)fluoranthene	0.0689	0.799	0.011	---	---	0.505	99% Chebyshev	4 of 18
Beryllium	0.708	2.88	0.066	10 (p)	21 (m)	2.125	99% Chebyshev	17 of 18
Bis(2-ethylhexyl)phthalate	0.0462	0.239	0.0122	---	---	0.0978	95% Chebyshev	6 of 18
Boron	8.028	39.2	3.15	0.5 (p)	---	13.49	95% Approx. Gamma	13 of 18
Butyl Benzyl Phthalate	0.016	0.151	0.151	---	---	0.0514	95% Chebyshev	1 of 18
Cadmium	0.207	0.8	0.28	32 (p)	0.36 (m)	0.799	99% Chebyshev	8 of 18
Carbazole	0.0153	0.128	0.013	---	---	0.045	95% Chebyshev	4 of 18
Chromium	20.26	128	7.9	0.4 (i)	26 (a)	48.59	95% Student's-t	18 of 18
Chrysene	0.102	1.3	0.011	---	---	0.812	99% Chebyshev	7 of 18
Cobalt	5.789	7.87	2.81	13 (p)	13 (p)	6.406	95% Student's-t	18 of 18
Copper	24.13	200	5.9	61 (i)	28 (a)	70.01	95% Chebyshev	18 of 18
Dibenz(a,h)anthracene	0.0471	0.404	0.045	---	---	0.284	99% Chebyshev	4 of 18
Dibenzofuran	0.0129	0.0862	0.0862	---	---	0.0336	95% Chebyshev	1 of 18
Dieldrin	0.0004866	0.00545	0.00545	---	0.0049 (m)	0.0034	99% Chebyshev	1 of 18
Diethyl Phthalate	0.0113	0.011	0.011	100 (p)	---	0.0215	95% Chebyshev	1 of 18
Di-n-butyl Phthalate	0.0179	0.01	0.01	200 (p)	---	0.0357	95% Chebyshev	1 of 18
Di-n-octyl Phthalate	0.0144	0.123	0.0154	---	---	0.0428	95% Chebyshev	2 of 18
Endrin	0.000304	0.00149	0.00149	---	---	0.000759	95% Chebyshev	1 of 18
Endrin Ketone	0.000874	0.00966	0.00966	---	---	0.0031	95% Chebyshev	1 of 18
Fluoranthene	0.159	2.19	0.0214	---	---	1.358	99% Chebyshev	6 of 18
Fluorene	0.0163	0.141	0.017	30 (i)	---	0.0496	95% Chebyshev	3 of 18
Indeno(1,2,3-cd)pyrene	0.151	1.51	0.02	---	---	0.969	99% Chebyshev	9 of 18
Iron	19477	102000	8450	---	---	41127	95% Chebyshev	18 of 18
Lead	57.7	471	8.22	120 (p)	11 (a)	318.3	99% Chebyshev	18 of 18
Lithium	16.57	26.6	2.59	2 (p)	---	18.68	95% Student's-t	18 of 18
Manganese	369.5	1210	82.3	500 (p)	220 (p)	473.3	95% Approx. Gamma	18 of 18
Mercury	0.0126	0.064	0.006	0.1 (i)	---	0.0218	95% Approx. Gamma	8 of 18
Molybdenum	0.949	10.7	0.085	2 (p)	---	6.812	99% Chebyshev	11 of 18
Nickel	17.04	51.7	11.7	30 (p)	38 (p)	20.76	95% Student's-t	18 of 18
Phenanthrene	0.109	1.34	0.018	---	---	0.845	99% Chebyshev	7 of 18
Pyrene	0.147	1.87	0.0149	---	---	1.169	99% Chebyshev	8 of 18
Silver	0.0543	0.41	0.092	2 (p)	---	0.148	95% Chebyshev	2 of 18
Strontium	57.32	93.6	26.6	---	---	65.4	95% Student's-t	18 of 18
Thallium	0.109	0.63	0.63	1 (p)	---	0.273	95% Chebyshev	1 of 18
Tin	0.625	3.67	0.68	50 (p)	---	1.494	95% Chebyshev	4 of 18
Titanium	20.67	55.9	3.41	---	---	26.26	95% Approx. Gamma	18 of 18
Vanadium	19.66	45.8	7.85	2 (p)	7.8 (a)	23.4	95% Student's-t	18 of 18
Zinc	418.4	5640	29.5	120 (i)	46 (a)	3485	99% Chebyshev	18 of 18
LPAH	0.1893	2.0105	0.13037	---	29 (i)	1.1663		
HPAH	1.1385	13.573	1.3892	---	1.1 (m)	7.899		
Total PAH	1.3278	15.5835	1.51957	---	---	9.0653		

Notes:

* Surface soil was collected from 0 to 0.5 ft. below ground surface.

* Chemicals of interest are any chemical measured in at least one sample at a frequency of detection greater than five percent.

(1) - From Table 3-4 of TCEQ, 2006.

(2) - From www.epa.gov/ecotox/ecossl.

(3) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(a) - avian

(i) - soil invertebrate

(m) - mammal

(p) - plant

TABLE 4
EXPOSURE POINT CONCENTRATION (mg/kg)
NORTH AREA SOIL+

Chemicals of Interest**	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark ⁽¹⁾	EPA Ecological Screening Level ⁽²⁾	95% UCL	Statistic Used ⁽³⁾	# of Detects/# of Samples
1,1-Dichloroethane	0.0286	0.518	0.00161	---	---	0.299	99% Chebyshev	3 of 19
1,1-Dichloroethene	0.0179	0.313	0.00178	---	---	0.181	99% Chebyshev	2 of 19
1,2-Dichloroethane	0.0106	0.177	0.00231	---	---	0.103	99% Chebyshev	4 of 19
2-Butanone	0.0029	0.208	0.0017	---	---	0.121	99% Chebyshev	11 of 19
2-Methylnaphthalene	0.0103	0.053	0.01	---	---	0.0198	95% Chebyshev	4 of 36
4,4'-DDE	0.0007	0.0149	0.00216	---	---	0.0024	95% Chebyshev	2 of 36
4,4'-DDT	0.000704	0.0108	0.000597	---	0.021 (m)	0.0038	99% Chebyshev	7 of 36
Acenaphthene	0.0142	0.157	0.021	20 (p)	---	0.036	95% Chebyshev	4 of 36
Aluminum	11971	18300	1810	---	---	13092	95% Student's-t	36 of 36
Anthracene	0.0215	0.264	0.00887	---	---	0.107	99% Chebyshev	6 of 36
Antimony	1.416	8.09	1.66	5 (p)	0.27 (m)	4.366	99% Chebyshev	16 of 36
Aroclor-1254	0.0056	0.0938	0.0122	---	---	0.0168	95% Chebyshev	2 of 36
Arsenic	2.573	5.69	0.54	18 (p)	18 (p)	2.959	95% Student's-t	32 of 36
Barium	142.1	362	46.1	330 (i)	330 (i)	211.7	95% Student's-t	36 of 36
Benzene	0.0027	0.00632	0.00138	---	---	0.0034	95% Student's-t	12 of 19
Benzo(a)anthracene	0.068	1.18	0.0383	---	---	0.464	99% Chebyshev	4 of 36
Benzo(a)pyrene	0.0922	1.42	0.0135	---	---	0.554	99% Chebyshev	10 of 36
Benzo(b)fluoranthene	0.12	1.62	0.0487	---	---	0.649	99% Chebyshev	11 of 36
Benzo(g,h,i)perylene	0.0961	1.28	0.0237	---	---	0.494	99% Chebyshev	14 of 36
Benzo(k)fluoranthene	0.0601	0.799	0.068	---	---	0.341	99% Chebyshev	6 of 36
Beryllium	0.752	2.88	0.066	10 (p)	21 (m)	1.087	95% Chebyshev	35 of 36
Bis(2-ethylhexyl)phthalate	0.0428	0.239	0.0122	---	---	0.0753	95% Chebyshev	11 of 36
Boron	7.576	39.2	3.14	0.5 (p)	---	20.55	99% Chebyshev	26 of 36
Bromoform	0.0023	0.018	0.011	---	---	0.013	99% Chebyshev	2 of 19
Butyl Benzyl Phthalate	0.0125	0.151	0.054	---	---	0.031	95% Chebyshev	2 of 36
Cadmium	0.193	0.8	0.28	32 (p)	0.36 (m)	0.59	99% Chebyshev	15 of 36
Carbazole	0.0143	0.128	0.0108	---	---	0.0323	95% Chebyshev	7 of 36
Carbon Disulfide	0.0028	0.0284	0.00757	---	---	0.018	99% Chebyshev	3 of 19
Chromium	17.17	128	7.76	0.4 (i)	26 (a)	22.69	95% Student's-t	36 of 36
Chrysene	0.0885	1.3	0.0104	---	---	0.529	99% Chebyshev	11 of 36
cis-1,2-Dichloroethene	0.0541	0.999	0.0195	---	---	0.577	99% Chebyshev	2 of 19
Cobalt	6.318	10.3	2.81	13 (p)	13 (p)	6.808	95% Student's-t	36 of 36
Copper	18.7	200	4.59	61 (i)	28 (a)	41.87	95% Student's-t	36 of 36
Cyclohexane	0.0056	0.00185	0.000981	---	---	0.00185	Maximum*	5 of 19
Dibenz(a,h)anthracene	0.0384	0.404	0.045	---	---	0.177	99% Chebyshev	7 of 36
Dibenzofuran	0.0099	0.0862	0.015	---	---	0.0205	95% Chebyshev	2 of 36
Diethyl Phthalate	0.0097	0.011	0.00992	100 (p)	---	0.0118	95% Student's-t	2 of 36
Di-n-butyl Phthalate	0.0155	0.015	0.01	200 (p)	---	0.0248	95% Chebyshev	2 of 36
Di-n-octyl Phthalate	0.0115	0.123	0.0154	---	---	0.0264	95% Chebyshev	3 of 36
Ethylbenzene	0.0016	0.00502	0.00114	---	---	0.00502	Maximum*	5 of 19
Fluoranthene	0.146	2.19	0.0214	---	---	0.923	99% Chebyshev	9 of 36
Fluorene	0.0112	0.141	0.017	30 (i)	---	0.0282	95% Chebyshev	4 of 36
Indeno(1,2,3-cd)pyrene	0.133	1.51	0.02	---	---	0.577	99% Chebyshev	13 of 36
Iron	17531	102000	7120	---	---	21765	95% Student's-t	36 of 36
Lead	37.8	471	5.88	120 (p)	11 (a)	96.63	95% Chebyshev	36 of 36
Lithium	18.84	32.2	2.59	2 (p)	---	20.51	95% Student's-t	36 of 36
m,p-Xylene	0.002	0.00139	0.00132	---	---	0.00139	Maximum*	2 of 19
Manganese	347	1210	82.3	500 (p)	220 (p)	405.2	95% Approx. Gamma	36 of 36
Mercury	0.0094	0.064	0.0034	0.1 (i)	---	0.03	99% Chebyshev	13 of 36
Methylcyclohexane	0.0024	0.00278	0.0015	---	---	0.00278	Maximum*	6 of 19
Molybdenum	0.586	10.7	0.085	2 (p)	---	3.551	99% Chebyshev	21 of 36
Naphthalene	0.0236	0.148	0.0013	---	---	0.102	99% Chebyshev	6 of 19
Nickel	17.17	51.7	9.74	30 (p)	38 (p)	18.79	95% Student's-t	36 of 36
Phenanthrene	0.0998	1.34	0.018	---	---	0.595	99% Chebyshev	10 of 36
Pyrene	0.143	1.97	0.0149	---	---	0.879	99% Chebyshev	11 of 36
Silver	0.0473	0.41	0.092	2 (p)	---	0.103	95% Student's-t	3 of 36
Strontium	56.15	96.2	22.1	---	---	62.05	95% Student's-t	36 of 36
Tetrachloroethene	0.0127	0.223	0.00135	---	---	0.129	99% Chebyshev	3 of 19
Tin	0.47	3.67	0.68	50 (p)	---	0.926	95% Chebyshev	5 of 36
Titanium	20.83	57	3.41	---	---	24.83	95% Student's-t	36 of 36
Toluene	0.0046	0.0122	0.00134	200 (p)	---	0.0122	Maximum*	8 of 19
Vanadium	20.54	45.8	7.85	2 (p)	7.8 (a)	22.9	95% Student's-t	36 of 36
Xylene (total)	0.119	1.76	0.00139	---	---	0.372	95% Adjusted Gamma	8 of 19
Zinc	242.5	5640	21.1	120 (i)	46 (a)	1784	99% Chebyshev	36 of 36
LPAA	0.1806	2.103	0.07617	---	29 (i)	0.888		
HPAA	0.9853	13.673	0.3039	---	1.1 (m)	5.587		
Total PAH	1.1659	15.776	0.38007	---	---	6.475		

Notes:

* Recommended UCL exceeds maximum observation, so the maximum measured concentration was used as the EPC.

+ Soil was collected from 0 to 4 ft. below ground surface.

** Chemicals of interest are any chemical measured in at least one sample at a frequency of detection greater than five percent.

(1) - From Table 3-4 of TCEQ, 2006.

(2) - From www.epa.gov/ecotox/ecossl.

(3) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(a) - avian

(i) - soil invertebrate

(m) - mammal

(p) - plant

TABLE 5
EXPOSURE POINT CONCENTRATION (mg/kg)
BACKGROUND SOIL+

Chemicals of Interest**	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark ⁽¹⁾	EPA Ecological Screening Level ⁽²⁾	95% UCL	Statistic Used ⁽³⁾	# of Detects/# of Samples
Antimony	0.953	2.19	0.25	5 (p)	0.27 (m)	2.19	Maximum*	5 of 10
Arsenic	3.438	5.9	0.24	18 (p)	18 (p)	4.477	95% Student's-t	10 of 10
Barium	333.1	1130	150	330 (i)	330 (i)	502.3	95% Approx. Gamma	10 of 10
Benzo(a)anthracene	0.0116	0.082	0.082	---	---	0.0457	95% Chebyshev	1 of 10
Benzo(a)pyrene	0.0122	0.076	0.076	---	---	0.0431	95% Chebyshev	1 of 10
Benzo(b)fluoranthene	0.00941	0.057	0.057	---	---	0.0325	95% Chebyshev	1 of 10
Benzo(g,h,i)perylene	0.0241	0.083	0.083	---	---	0.0527	95% Chebyshev	1 of 10
Benzo(k)fluoranthene	0.0158	0.106	0.106	---	---	0.0595	95% Chebyshev	1 of 10
Cadmium	0.0311	0.11	0.041	32 (p)	0.36 (m)	0.11	Maximum*	3 of 10
Carbazole	0.00512	0.011	0.011	---	---	0.00636	95% Student's-t	1 of 10
Chromium	15.2	20.1	10.7	0.4 (i)	26 (a)	16.95	95% Student's-t	10 of 10
Chrysene	0.0145	0.083	0.083	---	---	0.0477	95% Chebyshev	1 of 10
Copper	12.12	19.3	7.68	61 (i)	28 (a)	14.41	95% Student's-t	10 of 10
Fluoranthene	0.0208	0.156	0.156	---	---	0.156	Maximum*	1 of 10
Indeno(1,2,3-cd)pyrene	0.0551	0.417	0.417	---	---	0.417	Maximum*	1 of 10
Lead	13.43	15.2	11	120 (p)	11 (a)	14.33	95% Student's-t	10 of 10
Lithium	21.14	32.5	14.4	2 (p)	---	24.13	95% Student's-t	10 of 10
Manganese	377.4	551	284	500 (p)	220 (p)	431.8	95% Student's-t	10 of 10
Mercury	0.0213	0.03	0.015	0.1 (i)	---	0.0241	95% Student's-t	10 of 10
Molybdenum	0.522	0.68	0.42	2 (p)	---	0.565	95% Student's-t	10 of 10
Phenanthrene	0.0167	0.137	0.137	---	---	0.137	Maximum*	1 of 10
Pyrene	0.0218	0.127	0.127	---	---	0.0728	95% Chebyshev	1 of 10
Zinc	247	969	36.6	120 (i)	46 (a)	969	Maximum*	10 of 10
LPAH	0.0167	0.137	0.137	---	29 (i)	0.137		
HPAH	0.18531	1.187	1.187	---	1.1 (m)	0.927		
Total PAH	0.20201	1.324	1.324	---	---	1.064		

Notes:

* Recommended UCL exceeds maximum observation, so the maximum measured concentration was used as the EPC.

+ Soil was collected from 0 to 4 ft. below ground surface.

** Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-4 of TCEQ, 2006.

(2) - From www.epa.gov/ecotox/ecossl.

(3) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(a) - avian

(i) - soil invertebrate

(m) - mammal

(p) - plant

TABLE 6
EXPOSURE POINT CONCENTRATION (mg/kg)
INTRACOASTAL WATERWAY SEDIMENT

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Marine Sediment PCL ⁽¹⁾	TCEQ Second Effects Level for Sediment ⁽²⁾	Average of TCEQ PCL and SEL ⁽³⁾	EPA EcoTox Threshold ⁽⁴⁾	95% UCL	Statistic Used ⁽⁵⁾	# of Detects/# of Samples
1,2-Dichloroethane	4.10E-04	3.02E-03	3.02E-03	4.30E+00	2.58E+01	1.51E+01	---	1.10E-03	95% Chebyshev	1 of 16
1,2-Diphenylhydrazine/azobenzene	7.30E-03	3.17E-02	3.17E-02	---	---	---	---	1.03E-02	95% Student's-t	1 of 16
2-Methylnaphthalene	8.30E-03	1.88E-02	1.88E-02	7.00E-02	6.70E-01	3.70E-01	---	9.60E-03	95% Student's-t	1 of 16
3,3'-Dichlorobenzidine	4.08E-02	1.51E-01	1.51E-01	---	---	---	---	5.38E-02	95% Student's-t	1 of 16
4,4'-DDT	4.11E-04	3.32E-03	4.81E-04	1.19E-03	6.29E-02	3.20E-02	1.60E-03	2.30E-03	99% Chebyshev	4 of 17
4,6-Dinitro-2-methylphenol	1.70E-02	6.27E-02	6.27E-02	---	---	---	---	2.24E-02	95% Student's-t	1 of 16
Acenaphthylene	1.16E-02	6.31E-02	2.39E-02	1.60E-02	5.00E-01	2.58E-01	1.10E+00	2.73E-02	95% Chebyshev	2 of 16
Aluminum	6.85E+03	1.25E+04	3.90E+03	---	---	---	---	7.88E+03	95% Student's-t	16 of 16
Anthracene	2.01E-02	7.53E-02	2.36E-02	8.53E-02	1.10E+00	5.93E-01	---	4.24E-02	95% Chebyshev	6 of 16
Antimony	2.25E+00	8.14E+00	7.40E-01	---	---	---	---	2.99E+00	95% Approx. Gamma	16 of 16
Arsenic	4.03E+00	7.62E+00	2.41E+00	8.20E+00	7.00E+01	3.91E+01	8.20E+00	4.64E+00	95% Student's-t	16 of 16
Atrazine (Aatrex)	1.79E-02	8.14E-02	8.14E-02	---	---	---	---	2.54E-02	95% Student's-t	1 of 16
Barium	2.15E+02	3.77E+02	1.16E+02	---	---	---	---	2.43E+02	95% Approx. Gamma	16 of 16
Benzo(a)anthracene	4.54E-02	3.95E-01	6.75E-02	2.61E-01	1.60E+00	9.31E-01	---	3.01E-01	99% Chebyshev	3 of 16
Benzo(a)pyrene	6.61E-02	4.45E-01	5.25E-02	4.30E-01	1.60E+00	1.02E+00	4.30E-01	3.52E-01	99% Chebyshev	6 of 16
Benzo(b)fluoranthene	1.00E-01	6.11E-01	3.24E-02	---	---	---	---	4.91E-01	99% Chebyshev	9 of 16
Benzo(g,h,i)perylene	6.61E-02	4.42E-01	1.73E-02	---	---	---	---	3.57E-01	99% Chebyshev	7 of 16
Benzo(k)fluoranthene	5.89E-02	3.18E-01	4.74E-02	---	---	---	---	2.71E-01	99% Chebyshev	6 of 16
Beryllium	4.63E-01	8.20E-01	2.90E-01	---	---	---	---	5.28E-01	95% Student's-t	16 of 16
Boron	1.20E+01	2.72E+01	1.25E+01	---	---	---	---	2.72E+01	Maximum*	10 of 16
Butyl Benzyl Phthalate	2.08E-02	2.02E-01	2.02E-01	---	---	---	1.10E+01	7.35E-02	95% Chebyshev	1 of 16
Carbazole	1.51E-02	8.61E-02	1.95E-02	---	---	---	---	3.84E-02	95% Chebyshev	3 of 16
Chloroform	9.02E-04	5.27E-03	5.04E-03	4.30E+00	2.58E+01	1.51E+01	---	5.00E-03	99% Chebyshev	2 of 16
Chromium	9.21E+00	1.44E+01	5.01E+00	8.10E+01	3.70E+02	2.26E+02	8.10E+01	1.04E+01	95% Student's-t	16 of 16
Chrysene	7.74E-02	4.75E-01	1.37E-02	3.84E-01	2.80E+00	1.59E+00	---	1.53E-01	95% Approx. Gamma	10 of 16
Cobalt	4.39E+00	7.16E+00	3.05E+00	---	---	---	---	4.88E+00	95% Student's-t	16 of 16
Copper	7.11E+00	1.26E+01	3.28E+00	3.40E+01	2.70E+02	1.52E+02	3.40E+01	8.43E+00	95% Student's-t	16 of 16
Cyclohexane	2.30E-03	1.92E-03	1.92E-03	---	---	---	---	2.90E-03	95% Approx. Gamma	1 of 16
Dibenz(a,h)anthracene	4.35E-02	2.35E-01	5.11E-02	6.34E-02	2.60E-01	1.62E-01	---	2.05E-01	99% Chebyshev	6 of 16
Dibenzofuran	1.23E-02	3.05E-02	2.68E-02	---	---	---	2.00E+00	1.52E-02	95% Student's-t	2 of 16
Diethyl Phthalate	1.35E-02	3.89E-02	3.89E-02	---	---	---	6.30E-01	1.66E-02	95% Student's-t	1 of 16
Di-n-octyl Phthalate	1.80E-02	1.92E-01	1.47E-02	---	---	---	---	6.86E-02	95% Chebyshev	2 of 16
Fluoranthene	1.13E-01	8.04E-01	2.22E-02	6.00E-01	5.10E+00	2.85E+00	1.40E+00	6.14E-01	99% Chebyshev	8 of 16
Fluorene	1.22E-02	4.60E-02	1.24E-02	1.90E-02	5.40E-01	2.80E-01	5.40E-01	2.43E-02	95% Chebyshev	4 of 16
gamma-Chlordane	3.13E-04	8.26E-04	6.38E-04	2.26E-03	4.79E-03	3.53E-03	---	5.70E-04	95% Chebyshev	4 of 16
Hexachlorobenzene	1.00E-02	3.19E-02	3.19E-02	---	---	---	---	1.26E-02	95% Student's-t	1 of 16
Indeno(1,2,3-cd)pyrene	7.22E-02	4.05E-01	5.56E-02	---	---	---	---	3.47E-01	99% Chebyshev	6 of 16
Iron	1.34E+04	2.82E+04	6.75E+03	---	---	---	---	1.60E+04	95% Approx. Gamma	16 of 16
Lead	1.16E+01	3.23E+01	5.00E+00	4.67E+01	2.18E+02	1.32E+02	4.70E+01	1.48E+01	95% Approx. Gamma	16 of 16
Isopropylbenzene (cumene)	1.00E-03	7.04E-03	4.64E-03	---	---	---	---	5.80E-03	99% Chebyshev	2 of 16
Lithium	1.05E+01	2.00E+01	6.40E+00	---	---	---	---	1.21E+01	95% Student's-t	16 of 16
Manganese	2.83E+02	4.74E+02	1.92E+02	---	---	---	---	3.22E+02	95% Student's-t	16 of 16
Mercury	2.01E-02	3.60E-02	1.10E-02	1.50E-01	7.10E-01	4.30E-01	1.50E-01	2.33E-02	95% Student's-t	16 of 16
Methylcyclohexane	9.51E-04	3.70E-03	3.70E-03	---	---	---	---	1.30E-03	95% Approx. Gamma	1 of 16
Molybdenum	6.67E-01	5.66E+00	1.40E-01	---	---	---	---	2.15E+00	95% Chebyshev	16 of 16
Nickel	9.59E+00	1.67E+01	5.80E+00	2.09E+01	5.16E+01	3.63E+01	2.10E+01	1.08E+01	95% Student's-t	16 of 16
n-Nitrosodiphenylamine	1.02E-02	4.34E-02	4.34E-02	---	---	---	---	1.41E-02	95% Student's-t	1 of 16
Phenanthrene	7.46E-02	5.08E-01	3.11E-02	2.40E-01	1.50E+00	8.70E-01	1.10E+00	3.88E-01	99% Chebyshev	8 of 16
Pyrene	1.30E-01	8.62E-01	1.76E-02	6.65E-01	2.60E+00	1.63E+00	6.60E-01	6.78E-01	99% Chebyshev	10 of 16
Silver	1.72E-01	5.40E-01	3.00E-01	---	---	---	---	3.76E-01	Maximum*	6 of 16
Strontium	4.49E+01	8.17E+01	3.28E+01	---	---	---	---	5.12E+01	95% Student's-t	16 of 16
Titanium	2.56E+01	3.66E+01	1.91E+01	---	---	---	---	2.78E+01	95% Student's-t	16 of 16
Toluene	1.40E-03	5.81E-03	5.81E-03	9.40E-01	5.66E+00	3.30E+00	6.70E-01	2.00E-03	95% Approx. Gamma	1 of 16
Vanadium	1.39E+01	2.12E+01	9.06E+00	---	---	---	---	1.54E+01	95% Student's-t	16 of 16
Zinc	4.54E+01	9.26E+01	1.80E+01	1.50E+02	4.10E+02	2.80E+02	1.50E+02	5.41E+01	95% Student's-t	16 of 16
LPAH	1.27E-01	7.11E-01	1.10E-01	5.52E-01	3.16E+00	1.86E+00	---	4.92E-01	---	---
HPAH	7.73E-01	4.99E+00	3.77E-01	1.70E+00	9.60E+00	5.65E+00	---	3.77E+00	---	---
Total PAHs	8.99E-01	5.70E+00	4.87E-01	4.02E+00	4.48E+01	2.44E+01	4.00E+00	4.26E+00	---	---

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

* Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-3 of TCEQ, 2006.

(2) - From Table A-2 of TCEQ, 2006.

(3) - Midpoint between Sediment PCL and SEL as per memo received on January 24, 2008 from TCEQ.

(4) - From Table 2 of EPA's EcoTox Threshold ECO Update January, 2006.

(5) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

TABLE 7
EXPOSURE POINT CONCENTRATION (mg/kg)
INTRACOASTAL WATERWAY BACKGROUND SEDIMENT

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Marine Sediment PCL ⁽¹⁾	TCEQ Second Effects Level for Sediment ⁽²⁾	Average of TCEQ PCL and SEL ⁽³⁾	EPA EcoTox Threshold ⁽⁴⁾	95% UCL	Statistic Used ⁽⁵⁾	# of Detects/# of Samples
1,2,4-Trimethylbenzene	9.10E-04	3.91E-03	3.91E-03	2.16E+00	1.30E+01	7.56E+00	---	2.00E-03	95% Approx. Gamma	1 of 9
1,4-Dichlorobenzene	1.40E-03	4.11E-03	4.11E-03	7.00E-01	4.21E+00	2.46E+00	3.50E-01	2.80E-03	95% Approx. Gamma	1 of 9
2-Butanone	1.10E-03	2.16E-03	2.00E-03	---	---	---	---	1.70E-03	95% Student's-t	2 of 9
4,4'-DDT	1.56E-04	5.70E-04	5.70E-04	1.19E-03	6.29E-02	3.20E-02	1.60E-03	3.82E-04	95% Chebyshev	1 of 9
Aluminum	1.22E+04	2.18E+04	4.73E+03	---	---	---	---	1.65E+04	95% Student's-t	9 of 9
Antimony	4.02E+00	7.33E+00	1.68E+00	---	---	---	---	5.40E+00	95% Student's-t	9 of 9
Arsenic	5.81E+00	9.62E+00	2.36E+00	8.20E+00	7.00E+01	3.91E+01	8.20E+00	7.74E+00	95% Student's-t	9 of 9
Barium	209.7.2	2.80E+02	1.11E+02	---	---	---	---	2.39E+02	95% Student's-t	9 of 9
Benzo(b)fluoranthene	8.70E-03	3.69E-02	3.69E-02	---	---	---	---	2.41E-02	95% Chebyshev	1 of 9
Beryllium	7.66E-01	1.32E+00	3.20E-01	---	---	---	---	1.02E+00	95% Student's-t	9 of 9
Boron	2.76E+01	4.79E+01	1.33E+01	---	---	---	---	3.56E+01	95% Student's-t	9 of 9
Carbon Disulfide	1.50E-03	8.41E-03	3.41E-03	---	---	---	---	4.80E-03	95% Approx. Gamma	2 of 9
Chromium	1.28E+01	2.25E+01	5.81E+00	8.10E+01	3.70E+02	2.26E+02	8.10E+01	1.69E+01	95% Student's-t	9 of 9
cis-1,2-Dichloroethene	3.40E-03	2.84E-02	2.84E-02	---	---	---	---	3.45E-02	99% Chebyshev	1 of 9
Cobalt	6.70E+00	1.18E+01	3.32E+00	---	---	---	---	8.66E+00	95% Student's-t	9 of 9
Copper	8.14E+00	1.68E+01	2.68E+00	3.40E+01	2.70E+02	1.52E+02	3.40E+01	1.13E+01	95% Student's-t	9 of 9
Iron	1.65E+04	2.79E+04	7.44E+03	---	---	---	---	2.15E+04	95% Student's-t	9 of 9
Lead	9.59E+00	1.45E+01	5.34E+00	4.67E+01	2.18E+02	1.32E+02	4.70E+01	1.18E+01	95% Student's-t	9 of 9
Lithium	2.14E+01	4.46E+01	7.29E+00	---	---	---	---	3.03E+01	95% Student's-t	9 of 9
Manganese	3.31E+02	4.42E+02	2.12E+02	---	---	---	---	3.86E+02	95% Student's-t	9 of 9
Mercury	1.76E-02	5.00E-02	6.50E-03	1.50E-01	7.10E-01	4.30E-01	1.50E-01	2.73E-02	95% Approx. Gamma	9 of 9
Molybdenum	2.41E-01	3.50E-01	1.60E-01	---	---	---	---	2.83E-01	95% Student's-t	9 of 9
Nickel	1.49E+01	2.73E+01	6.31E+00	2.09E+01	5.16E+01	3.63E+01	2.10E+01	1.99E+01	95% Student's-t	9 of 9
Strontium	5.92E+01	8.74E+01	3.48E+01	---	---	---	---	7.28E+01	95% Student's-t	9 of 9
Titanium	3.18E+01	5.45E+01	2.11E+01	---	---	---	---	3.83E+01	95% Student's-t	9 of 9
Trichloroethene	2.10E-03	1.59E-02	1.59E-02	1.47E+00	8.82E+00	5.15E+00	1.60E+00	4.30E-03	99% Chebyshev	1 of 9
Vanadium	2.02E+01	3.42E+01	1.02E+01	---	---	---	---	2.59E+01	95% Student's-t	9 of 9
Xylene	1.70E-03	3.35E-03	3.35E-03	---	---	---	---	2.60E-03	95% Student's-t	1 of 9
Zinc	3.60E+01	5.41E+01	1.93E+01	1.50E+02	4.10E+02	2.80E+02	1.50E+02	4.45E+01	95% Student's-t	9 of 9
LPAH ⁺⁺				5.52E-01	3.16E+00	1.86E+00	---			
HPAH	8.70E-03	3.69E-02	3.69E-02	1.70E+00	9.60E+00	5.65E+00	---	2.41E-02		
Total PAHs	8.70E-03	3.69E-02	3.69E-02	4.02E+00	4.48E+01	2.44E+01	---	2.41E-02		

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

⁺⁺ No LPAHs were detected in the samples.

(1) - From Table 3-3 of TCEQ, 2006.

(2) - From Table A-2 of TCEQ, 2006.

(3) - Midpoint between Sediment PCL and SEL as per memo received on January 24, 2008 from TCEQ.

(4) - From Table 2 of EPA's EcoTox Threshold ECO Update January, 2006.

(5) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

TABLE 8
EXPOSURE POINT CONCENTRATION (mg/kg)
WETLAND SEDIMENT

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Marine Sediment PCL ⁽¹⁾	TCEQ Second Effects Level for Sediment ⁽²⁾	Average of TCEQ PCL and SEL ⁽³⁾	EPA EcoTox Threshold ⁽⁴⁾	95% UCL	Statistic Used ⁽⁵⁾	# of Detects/# of Samples
1,2-Dichloroethane	2.49E-04	2.40E-03	1.83E-03	4.30E+00	2.58E+01	1.51E+01	---	5.90E-04	95% Chebyshev	3 of 48
2-Methylnaphthalene	2.46E-02	4.30E-01	1.22E-02	7.00E-02	6.70E-01	3.70E-01	---	1.16E-01	99% Chebyshev	4 of 48
4,4'-DDT	9.52E-04	9.22E-03	9.29E-04	1.19E-03	6.29E-02	3.20E-02	1.60E-03	2.20E-03	97.5% Chebyshev	16 of 55
Acenaphthene	1.95E-02	1.33E-01	1.60E-02	1.60E-02	5.00E-01	2.58E-01	1.10E+00	6.40E-02	99% Chebyshev	4 of 48
Acenaphthylene	3.14E-02	5.45E-01	2.91E-02	4.40E-02	6.40E-01	3.42E-01	---	1.65E-01	99% Chebyshev	4 of 48
Aluminum	1.32E+04	1.82E+04	3.40E+03	---	---	---	---	1.40E+04	95% Student's-t	48 of 48
Anthracene	2.88E-02	3.34E-01	8.38E-03	8.53E-02	1.10E+00	5.93E-01	---	1.26E-01	99% Chebyshev	8 of 48
Antimony ⁽⁶⁾	1.15E+00	4.24E+00	4.60E-01	---	---	---	---	1.61E+00	95% Chebyshev	40 of 48
Arsenic	2.53E+00	1.28E+01	1.00E+00	8.20E+00	7.00E+01	3.91E+01	8.20E+00	3.40E+00	95% Approx. Gamma	35 of 48
Barium	1.52E+02	8.20E+02	3.60E+01	---	---	---	---	2.38E+02	95% Chebyshev	48 of 48
Benzo(a)anthracene	5.43E-02	9.93E-01	5.46E-02	2.61E-01	1.60E+00	9.31E-01	---	3.06E-01	99% Chebyshev	5 of 48
Benzo(a)pyrene	1.04E-01	1.30E+00	1.76E-02	4.30E-01	1.60E+00	1.02E+00	4.30E-01	4.76E-01	99% Chebyshev	15 of 48
Benzo(b)fluoranthene	9.02E-02	1.36E+00	1.62E-02	---	---	---	---	4.31E-01	99% Chebyshev	19 of 48
Benzo(g,h,i)perylene	1.98E-01	1.94E+00	4.40E-02	---	---	---	---	7.55E-01	99% Chebyshev	24 of 48
Benzo(k)fluoranthene	6.59E-02	7.30E-01	6.92E-02	---	---	---	---	2.37E-01	99% Chebyshev	14 of 48
Beryllium	8.94E-01	1.37E+00	2.80E-01	---	---	---	---	9.43E-01	95% Student's-t	48 of 48
Boron ⁽⁶⁾	1.45E+01	4.62E+01	5.17E+00	---	---	---	---	3.20E+01	99% Chebyshev	24 of 48
Cadmium	1.03E-01	4.80E-01	3.30E-02	1.20E+00	9.60E+00	5.40E+00	1.20E+00	3.13E-01	99% Chebyshev	20 of 48
Carbazole	1.92E-02	1.41E-01	1.58E-02	---	---	---	---	6.45E-02	99% Chebyshev	5 of 48
Carbon Disulfide	5.25E-04	6.99E-03	3.34E-03	---	---	---	---	2.60E-03	99% Chebyshev	4 of 48
Chromium	1.51E+01	4.46E+01	8.96E+00	8.10E+01	3.70E+02	2.26E+02	8.10E+01	1.64E+01	95% Student's-t	48 of 48
Chromium VI	9.56E-01	4.04E+00	1.30E+00	---	---	---	---	3.36E+00	99% Chebyshev	6 of 25
Chrysene	2.17E-01	4.05E+00	1.10E-02	3.84E-01	2.80E+00	1.59E+00	---	1.24E+00	99% Chebyshev	19 of 48
Cobalt	6.98E+00	9.89E+00	3.00E+00	---	---	---	---	7.32E+00	95% Student's-t	48 of 48
Copper	1.45E+01	4.90E+01	5.44E+00	3.40E+01	2.70E+02	1.52E+02	3.40E+01	1.66E+01	95% Student's-t	48 of 48
Dibenz(a,h)anthracene	2.03E-01	2.91E+00	1.29E-01	6.34E-02	2.60E-01	1.62E-01	---	1.10E+00	99% Chebyshev	6 of 48
Dibenzofuran	1.39E-02	8.00E-02	1.00E-02	---	---	---	2.00E+00	2.50E-02	95% Chebyshev	3 of 48
Endosulfan Sulfate	1.80E-03	6.00E-02	7.31E-03	---	---	---	5.40E-03	1.44E-02	99% Chebyshev	3 of 48
Endrin Aldehyde	1.00E-03	1.00E-02	5.66E-04	---	---	---	---	4.30E-03	99% Chebyshev	9 of 48
Endrin Ketone	7.85E-04	1.30E-02	3.29E-03	---	---	---	---	2.00E-03	95% Chebyshev	3 of 48
Fluoranthene	1.08E-01	2.17E+00	1.20E-02	6.00E-01	5.10E+00	2.85E+00	1.40E+00	6.37E-01	99% Chebyshev	13 of 48
Fluorene	1.86E-02	1.39E-01	1.50E-02	1.90E-02	5.40E-01	2.80E-01	5.40E-01	6.37E-02	99% Chebyshev	4 of 48
gamma-Chlordane	4.05E-04	3.60E-03	7.69E-04	2.26E-03	4.79E-03	3.53E-03	---	8.27E-04	95% Chebyshev	4 of 48
Indeno(1,2,3-cd)pyrene	2.01E-01	1.94E+00	6.28E-02	---	---	---	---	7.85E-01	99% Chebyshev	23 of 48
Iron	1.72E+04	6.09E+04	1.11E+04	---	---	---	---	1.88E+04	95% Student's-t	49 of 48
Lead	2.54E+01	2.37E+02	9.40E+00	4.67E+01	2.18E+02	1.32E+02	4.70E+01	4.68E+01	95% Chebyshev	48 of 48
Lithium	1.87E+01	2.76E+01	5.43E+00	---	---	---	---	1.96E+01	95% Student's-t	48 of 48
Manganese	3.32E+02	1.01E+03	8.76E+01	---	---	---	---	3.83E+02	95% Approx. Gamma	48 of 48
Mercury	1.99E-02	8.10E-02	6.10E-03	1.50E-01	7.10E-01	4.30E-01	1.50E-01	2.68E-02	95% H-UCL	26 of 48
Molybdenum	5.81E-01	3.24E+00	1.30E-01	---	---	---	---	7.63E-01	95% Approx. Gamma	38 of 48
Nickel	1.73E+01	2.77E+01	1.09E+01	2.09E+01	5.16E+01	3.63E+01	2.10E+01	1.81E+01	95% Student's-t	48 of 48
Phenanthrene	7.61E-02	1.30E+00	2.30E-02	2.40E-01	1.50E+00	8.70E-01	1.10E+00	4.32E-01	99% Chebyshev	12 of 48
Pyrene	1.54E-01	1.64E+00	1.59E-02	6.65E-01	2.60E+00	1.63E+00	6.60E-01	6.63E-01	99% Chebyshev	19 of 48
Strontium	6.70E+01	3.30E+02	1.88E+01	---	---	---	---	7.64E+01	95% H-UCL	48 of 48
Tin ⁽⁶⁾	6.38E-01	4.61E+00	3.45E+00	---	---	---	---	1.26E+00	95% Chebyshev	4 of 48
Titanium	2.91E+01	6.87E+01	8.15E+00	---	---	---	---	3.27E+01	95% Approx. Gamma	48 of 48
Toluene	6.55E-04	2.14E-03	1.57E-03	9.40E-01	5.66E+00	3.30E+00	6.70E-01	1.20E-03	95% Chebyshev	3 of 48
Vanadium	2.17E+01	3.20E+01	9.02E+00	---	---	---	---	2.28E+01	95% Student's-t	48 of 48
Zinc	1.39E+02	9.03E+02	3.15E+01	1.50E+02	4.10E+02	2.80E+02	1.50E+02	2.36E+02	95% Chebyshev	53 of 53
LPAH	1.99E-01	2.88E+00	1.04E-01	5.52E-01	3.16E+00	1.86E+00	---	9.67E-01	---	---
HPAH	1.40E+00	1.90E+01	4.32E-01	1.70E+00	9.60E+00	5.65E+00	---	6.63E+00	---	---
TOTAL PAHs	1.59E+00	2.19E+01	5.36E-01	4.02E+00	4.48E+01	1.18E+01	4.00E+00	7.60E+00	---	---

Notes:

* Chemicals of interest are any chemical measured in at least one sample at a frequency of detection greater than five percent.

(1) - From Table 3-3 of TCEQ, 2006.

(2) - From Table A-2 of TCEQ, 2006.

(3) - Midpoint between Sediment PCL and SEL as per memo received on January 24, 2008 from TCEQ.

(4) - From Table 2 of EPA's EcoTox Threshold ECO Update January, 2006.

(5) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

(6) - Samples 2WSED8, SWSED10, 4WSED2, and 4WSED3 were re-analyzed for antimony, boron, and tin because they were measured at concentrations much higher than the rest of the data although QA/QC indicated that they were acceptable. The re-analysis was run twice with good concurrence between the two re-analyses but with very different values from the original so the first re-analyzed value was used in the UCL calculation.

TABLE 9
EXPOSURE POINT CONCENTRATION (mg/kg)
POND SEDIMENT

Chemicals of Interest*	Average	Max Detection	Min Detection	TCEQ Marine Sediment PCL ⁽¹⁾	TCEQ Second Effects Level for Sediment ⁽²⁾	Average of TCEQ PCL and SEL ⁽³⁾	EPA EcoTox Threshold ⁽⁴⁾	RME EPC	Statistic Used ⁽⁵⁾	# of Detects/# of Samples
2,4,6-Trichlorophenol	1.75E-02	4.29E-02	4.29E-02	---	---	---	---	4.29E-02	RME EPC is max detect	1 of 8
4,4'-DDD	6.96E-03	6.76E-04	6.76E-04	1.22E-03	7.81E-03	4.52E-03	---	6.76E-04	RME EPC is max detect*	3 of 8
4,4'-DDT	4.16E-03	1.57E-03	1.11E-03	1.19E-03	6.29E-02	3.20E-02	1.60E-03	1.57E-03	RME EPC is max detect*	1 of 8
Acetone	2.38E-02	7.98E-02	7.98E-02	1.67E+02	1.00E+04	5.09E+03	---	7.98E-02	RME EPC is max detect	1 of 8
Aluminum	1.17E+04	1.63E+04	7.99E+03	---	---	---	---	1.63E+04	RME EPC is max detect	8 of 8
Antimony	7.95E-01	1.85E+00	3.30E-01	---	---	---	---	1.85E+00	RME EPC is max detect	8 of 8
Arsenic	1.74E+00	5.01E+00	3.39E+00	8.20E+00	7.00E+01	3.91E+01	8.20E+00	5.01E+00	RME EPC is max detect	3 of 8
Barium	1.99E+02	4.17E+02	1.08E+02	---	---	---	---	4.17E+02	RME EPC is max detect	8 of 8
Benzo(b)fluoranthene	4.77E-02	1.06E-01	2.93E-02	---	---	---	---	1.06E-01	RME EPC is max detect	6 of 8
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	1.35E-01	---	---	---	---	1.35E-01	RME EPC is max detect	1 of 8
Benzo(k)fluoranthene	5.27E-02	1.30E-01	1.10E-01	---	---	---	---	1.30E-01	RME EPC is max detect	3 of 8
Beryllium	8.34E-01	1.13E+00	5.80E-01	---	---	---	---	1.13E+00	RME EPC is max detect	8 of 8
beta-BHC	7.96E-03	6.99E-04	6.99E-04	---	---	---	---	7.00E-04	RME EPC is max detect*	1 of 8
Boron	1.50E+01	2.84E+01	1.10E+01	---	---	---	---	2.84E+01	RME EPC is max detect	5 of 8
Bromomethane	8.90E-03	3.10E-02	1.40E-02	---	---	---	---	3.10E-02	RME EPC is max detect	2 of 8
Cadmium	1.47E-01	2.70E-01	1.90E-01	1.20E+00	9.60E+00	5.40E+00	1.20E+00	2.70E-01	RME EPC is max detect	5 of 8
Carbon Disulfide	1.40E-03	7.71E-03	7.71E-03	---	---	---	---	7.70E-03	RME EPC is max detect	1 of 8
Chromium	1.29E+01	2.01E+01	8.29E+00	8.10E+01	3.70E+02	2.26E+02	8.10E+01	2.01E+01	RME EPC is max detect	8 of 8
Chrysene	9.50E-03	2.57E-02	2.57E-02	3.84E-01	2.80E+00	1.59E+00	---	2.57E-02	RME EPC is max detect	1 of 8
Cobalt	6.94E+00	8.99E+00	5.19E+00	---	---	---	---	8.99E+00	RME EPC is max detect	8 of 8
Copper	1.52E+01	2.68E+01	8.33E+00	3.40E+01	2.70E+02	1.52E+02	3.40E+01	2.68E+01	RME EPC is max detect	8 of 8
Iron	1.53E+04	2.01E+04	1.13E+04	---	---	---	---	2.01E+04	RME EPC is max detect	8 of 8
Lead	1.75E+01	3.05E+01	1.06E+01	4.67E+01	2.18E+02	1.32E+02	4.70E+01	3.05E+01	RME EPC is max detect	8 of 8
Lithium	1.85E+01	2.37E+01	1.35E+01	---	---	---	---	2.37E+01	RME EPC is max detect	8 of 8
m,p-Cresol	1.49E-02	3.75E-02	3.75E-02	---	---	---	---	3.75E-02	RME EPC is max detect	1 of 8
Manganese	4.88E+02	7.11E+02	3.52E+02	---	---	---	---	7.11E+02	RME EPC is max detect	8 of 8
Methyl Iodide	8.10E-03	4.10E-02	4.10E-02	---	---	---	---	1.11E-02	RME EPC is max detect	1 of 8
Molybdenum	1.46E-01	6.00E-01	2.10E-01	---	---	---	---	6.00E-01	RME EPC is max detect	2 of 8
Nickel	1.63E+01	2.06E+01	1.23E+01	2.09E+01	5.16E+01	3.63E+01	2.10E+01	2.06E+01	RME EPC is max detect	8 of 8
Pyrene	1.47E-02	2.65E-02	2.01E-02	6.65E-01	2.60E+00	1.63E+00	6.60E-01	2.65E-02	RME EPC is max detect	3 of 8
Strontium	1.04E+02	1.81E+02	6.33E+01	---	---	---	---	1.81E+02	RME EPC is max detect	8 of 8
Titanium	3.00E+01	4.05E+01	1.91E+01	---	---	---	---	4.05E+01	RME EPC is max detect	8 of 8
Vanadium	2.18E+01	2.74E+01	1.68E+01	---	---	---	---	2.74E+01	RME EPC is max detect	8 of 8
Zinc	3.32E+02	9.99E+02	3.82E+01	1.50E+02	4.10E+02	2.80E+02	1.50E+02	9.99E+02	RME EPC is max detect	8 of 8
LPAH**				---	---	---	---			
HPAHs	1.49E-01	4.23E-01	3.20E-01	1.70E+00	9.60E+00	5.65E+00		4.23E-01		
Total PAHs	1.49E-01	1.49E-01	1.49E-01	4.02E+00	4.48E+01	2.44E+01	4.00E+00	4.23E-01		

Notes:

*The maximum detected value is sometimes lower than the average since 1/2 of the reporting limit was used as a proxy value when it was not detected, and because J flag data were used in the risk assessment.

* Chemicals of interest are any chemical measured in at least one sample.

** No LPAHs were detected in the samples.

(1) - From Table 3-3 of TCEQ, 2006.

(2) - From Table A-2 of TCEQ, 2006.

(3) - Midpoint between Sediment PCL and SEL as per memo received on January 24, 2008 from TCEQ.

(4) - From Table 2 of EPA's EcoTox Threshold ECO Update January, 2006.

(5) - Recommended exposure point concentration to be used based on data distribution per Pro UCL (see Appendix A). When the compound was not detected in a given sample, one-half of the sample detection limit was used as the proxy concentration for that sample.

TABLE 10
EXPOSURE POINT CONCENTRATION (mg/L)
INTRACOASTAL WATERWAY SURFACE WATER (TOTAL)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
Acrylonitrile	9.38E-04	2.10E-03	2.10E-03	2.91E-01	2.10E-03	RME EPC is max detect	1 of 4
Aluminum	4.05E-01	5.50E-01	2.80E-01	---	5.50E-01	RME EPC is max detect	4 of 4
Barium	2.40E-02	2.60E-02	2.20E-02	2.50E+01	2.60E-02	RME EPC is max detect	4 of 4
Boron	4.69E+00	4.81E+00	4.60E+00	---	4.81E+00	RME EPC is max detect	4 of 4
Chromium	7.98E-02	1.20E-01	7.00E-02	---	1.20E-01	RME EPC is max detect	4 of 4
Copper	6.53E-03	1.10E-02	9.10E-03	---	1.10E-02	RME EPC is max detect	2 of 4
Iron	4.63E-01	5.90E-01	3.20E-01	---	5.90E-01	RME EPC is max detect	4 of 4
Lithium	2.53E-01	2.70E-01	2.20E-01	---	2.70E-01	RME EPC is max detect	4 of 4
Manganese	4.03E-02	4.80E-02	3.30E-02	---	4.80E-02	RME EPC is max detect	4 of 4
Silver	2.80E-03	3.70E-03	2.80E-03	---	3.70E-03	RME EPC is max detect	3 of 4
Strontium	7.22E+00	7.35E+00	6.95E+00	---	7.35E+00	RME EPC is max detect	4 of 4
Titanium	3.90E-03	5.70E-03	2.00E-03	---	5.70E-03	RME EPC is max detect	4 of 4
Vanadium	4.25E-02	6.10E-02	3.50E-02	---	6.10E-02	RME EPC is max detect	4 of 4

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-2 of TCEQ, 2006 and only the TCEQ Ecological Benchmarks for Water without the "dissolved" notation were included in the table.

TABLE 11
EXPOSURE POINT CONCENTRATION (mg/L)
INTRACOASTAL WATERWAY BACKGROUND SURFACE WATER (TOTAL)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
4,4'-DDD	3.30E-06	7.62E-06	3.60E-06	2.50E-05	7.62E-06	RME EPC is max detect	2 of 4
4,4'-DDT	4.93E-06	1.30E-05	1.30E-05	1.00E-06	1.30E-05	RME EPC is max detect	1 of 4
Acetone	1.47E-03	4.52E-03	4.52E-03	2.82E+02	4.52E-03	RME EPC is max detect	1 of 4
Aldrin	9.24E-06	1.10E-05	4.40E-06	6.50E-04 ⁽³⁾	1.10E-05	RME EPC is max detect	4 of 4
Aluminum	2.44E-01	4.00E-01	2.10E-01	---	4.00E-01	RME EPC is max detect	4 of 4
Barium	1.96E-02	2.00E-02	2.00E-02	2.50E+01	2.00E-02	RME EPC is max detect	4 of 4
Benzo(g,h,i)perylene	1.20E-04	2.02E-04	2.02E-04	3.00E-01 ⁽³⁾	2.02E-04	RME EPC is max detect	1 of 4
Benzo(k)fluoranthene	1.73E-04	3.11E-04	3.11E-04	3.00E-01 ⁽³⁾	3.11E-04	RME EPC is max detect	1 of 4
Bis(ethylhexyl) Phthalate	4.17E-03	1.97E-02	1.94E-02	3.60E-01 ⁽²⁾	1.97E-02	RME EPC is max detect	2 of 4
Boron	4.38E+00	4.50E+00	4.27E+00	---	4.50E+00	RME EPC is max detect	4 of 4
Chromium	7.84E-02	7.90E-02	7.80E-02	---	7.90E-02	RME EPC is max detect	4 of 4
Chromium VI	6.20E-03	1.10E-02	1.10E-02	---	1.10E-02	RME EPC is max detect	1 of 4
Chrysene	1.61E-04	3.68E-04	3.68E-04	3.00E-01 ⁽³⁾	3.68E-04	RME EPC is max detect	1 of 4
Di-n-butyl Phthalate	6.70E-04	1.42E-03	8.28E-04	5.00E-03	1.42E-03	RME EPC is max detect	2 of 4
Di-n-octyl Phthalate	2.65E-04	6.50E-04	6.50E-04	3.4E-03 ⁽²⁾	6.50E-04	RME EPC is max detect	1 of 4
Iron	3.40E-01	4.30E-01	3.40E-01	---	4.30E-01	RME EPC is max detect	4 of 4
Lithium	3.00E-01	3.40E-01	2.70E-01	---	3.40E-01	RME EPC is max detect	4 of 4
Manganese	3.60E-02	4.10E-02	3.40E-02	---	4.10E-02	RME EPC is max detect	4 of 4
Methoxychlor	3.66E-06	1.40E-05	1.40E-05	3.00E-05	1.40E-05	RME EPC is max detect	1 of 4
Molybdenum	2.72E-03	4.20E-03	1.80E-03	---	4.20E-03	RME EPC is max detect	2 of 4
Silver	5.43E-03	5.90E-03	4.70E-03	---	5.90E-03	RME EPC is max detect	4 of 4
Strontium	7.76E+00	8.31E+00	7.31E+00	---	8.31E+00	RME EPC is max detect	4 of 4
Titanium	2.98E-03	4.20E-03	2.40E-03	---	4.20E-03	RME EPC is max detect	4 of 4
Vanadium	4.14E-02	3.70E-02	1.10E-02	---	3.70E-02	RME EPC is max detect	4 of 4
LPAHs ^{**}				---			
HPAHs	4.55E-04	8.81E-04	8.81E-04	3.00E-01 ⁽³⁾	8.81E-04		
Total PAHs	4.55E-04	4.55E-04	4.55E-04	3.00E-01 ⁽³⁾	4.55E-04		

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

^{**} No LPAHs were detected in the samples.

(1) - From Table 3-2 of TCEQ, 2006 and only the TCEQ Ecological Benchmarks for Water without the "dissolved" notation were included in the table.

(2) - Buchman, 2008.

(3) - Buchman, 2008 acute value for chemical class.

TABLE 12
EXPOSURE POINT CONCENTRATION (mg/L)
WETLAND SURFACE WATER (TOTAL)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
1,2-Dichloroethane	2.30E-03	3.85E-03	2.55E-03	5.65E+00	3.85E-03	RME EPC is max detect	3 of 4
Acrolein	1.21E-02	9.29E-03	9.29E-03	5.00E-03	9.30E-03	RME EPC is max detect*	1 of 4
Aluminum	5.08E-01	8.00E-01	1.70E-01	---	8.00E-01	RME EPC is max detect	4 of 4
Barium	2.20E-01	3.70E-01	1.50E-01	2.50E+01	3.70E-01	RME EPC is max detect	4 of 4
Boron	1.96E+00	2.42E+00	8.30E-01	---	2.42E+00	RME EPC is max detect	4 of 4
Chromium	1.49E-02	3.70E-02	2.00E-02	---	3.70E-02	RME EPC is max detect	2 of 4
Chromium VI	3.13E-03	8.00E-03	8.00E-03	---	8.00E-03	RME EPC is max detect	1 of 4
Copper	6.38E-03	1.10E-02	9.50E-03	---	1.10E-02	RME EPC is max detect	2 of 4
Iron	6.45E-01	1.08E+00	1.90E-01	---	1.08E+00	RME EPC is max detect	4 of 4
Lithium	1.89E-01	2.50E-01	5.70E-02	---	2.50E-01	RME EPC is max detect	4 of 4
Manganese	1.37E-01	3.40E-01	1.80E-02	---	3.40E-01	RME EPC is max detect	4 of 4
Mercury	3.75E-05	7.00E-05	4.00E-05	---	7.00E-05	RME EPC is max detect	2 of 4
Molybdenum	9.30E-03	1.50E-02	5.60E-03	---	1.50E-02	RME EPC is max detect	3 of 4
Nickel	1.10E-03	2.20E-03	1.20E-03	---	2.20E-03	RME EPC is max detect	2 of 4
Strontium	5.27E+00	6.64E+00	1.87E+00	---	6.64E+00	RME EPC is max detect	4 of 4
Titanium	6.40E-03	9.80E-03	2.40E-03	---	9.80E-03	RME EPC is max detect	4 of 4
Zinc	7.30E-03	2.20E-02	2.20E-02	---	2.20E-02	RME EPC is max detect	1 of 4

Notes:

*The maximum detected value is sometimes lower than the average since 1/2 of the reporting limit was used as a proxy value when it was not detected, and because J flag data were used in the risk assessment.

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-2 of TCEQ, 2006 and only the TCEQ Ecological Benchmarks for Water without the "dissolved" notation were included in the table.

TABLE 13
EXPOSURE POINT CONCENTRATION (mg/L)
POND SURFACE WATER (TOTAL)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
4-Chloroaniline	2.79E-04	8.23E-04	8.23E-04	1.29E-01 ⁽²⁾	8.00E-04	RME EPC is max detect	1 of 6
Aluminum	9.13E-01	2.22E+00	4.10E-01	---	2.22E+00	RME EPC is max detect	5 of 6
Antimony	3.82E-03	7.60E-03	3.00E-03	---	7.60E-03	RME EPC is max detect	3 of 6
Arsenic	5.40E-03	1.30E-02	1.20E-02	---	1.30E-02	RME EPC is max detect	2 of 6
Barium	1.45E-01	1.90E-01	1.30E-01	2.50E+01	1.90E-01	RME EPC is max detect	6 of 6
Benzo(a)pyrene	1.12E-04	3.48E-04	3.48E-04	3.00E-01 ⁽³⁾	3.00E-04	RME EPC is max detect	1 of 6
Benzo(b)fluoranthene	4.03E-04	1.81E-03	1.81E-03	3.00E-01 ⁽³⁾	1.80E-03	RME EPC is max detect	1 of 6
Benzo(g,h,i)perylene	3.71E-04	1.73E-03	1.73E-03	3.00E-01 ⁽³⁾	1.70E-03	RME EPC is max detect	1 of 6
Benzo(k)fluoranthene	2.06E-04	5.42E-04	5.42E-04	3.00E-01 ⁽³⁾	5.00E-04	RME EPC is max detect	1 of 6
Bis(2-ethylhexyl)phthalate	1.92E-02	4.00E-02	2.90E-02	3.60E-01 ⁽²⁾	4.00E-02	RME EPC is max detect	3 of 6
Boron	2.97E+00	3.52E+00	2.45E+00	---	3.52E+00	RME EPC is max detect	6 of 6
Chromium	8.50E-04	1.50E-03	1.50E-03	---	1.50E-03	RME EPC is max detect	1 of 6
Chromium VI	8.50E-03	1.60E-02	1.50E-02	---	1.60E-02	RME EPC is max detect	2 of 6
Chrysene	2.48E-04	7.10E-04	7.10E-04	3.00E-01 ⁽³⁾	7.00E-04	RME EPC is max detect	1 of 6
Cobalt	9.12E-04	3.20E-03	5.20E-04	---	3.20E-03	RME EPC is max detect	2 of 6
Dibenz(a,h)anthracene	6.26E-04	3.04E-03	3.04E-03	3.00E-01 ⁽³⁾	3.00E-03	RME EPC is max detect	1 of 6
Di-n-butyl Phthalate	3.12E-03	3.81E-03	1.07E-03	5.00E-03	3.80E-03	RME EPC is max detect	5 of 6
Indeno(1,2,3-cd)pyrene	6.73E-04	3.44E-03	3.44E-03	3.00E-01 ⁽³⁾	3.40E-03	RME EPC is max detect	1 of 6
Iron	2.27E+00	6.67E+00	5.20E-01	---	6.67E+00	RME EPC is max detect	6 of 6
Lead	2.63E-03	1.10E-02	1.10E-02	---	1.10E-02	RME EPC is max detect	1 of 6
Lithium	1.16E-01	1.60E-01	6.70E-02	---	1.60E-01	RME EPC is max detect	6 of 6
Manganese	6.37E-01	1.44E+00	8.50E-02	---	1.44E+00	RME EPC is max detect	6 of 6
Molybdenum	8.73E-03	1.80E-02	1.30E-02	---	1.80E-02	RME EPC is max detect	3 of 6
Nickel	4.60E-03	7.90E-03	3.00E-03	---	7.90E-03	RME EPC is max detect	6 of 6
Selenium	4.26E-03	9.80E-03	9.80E-03	1.36E-01	9.80E-03	RME EPC is max detect	1 of 6
Silver	9.30E-03	1.50E-02	3.70E-03	---	1.50E-02	RME EPC is max detect	6 of 6
Strontium	4.47E+00	7.19E+00	1.77E+00	---	7.19E+00	RME EPC is max detect	6 of 6
Thallium	2.86E-03	7.70E-03	6.20E-03	2.13E-02	7.70E-03	RME EPC is max detect	2 of 6
Titanium	1.90E-02	4.40E-02	2.10E-03	---	4.40E-02	RME EPC is max detect	6 of 6
Vanadium	3.20E-03	8.40E-03	4.30E-03	---	8.40E-03	RME EPC is max detect	3 of 6
Zinc	1.20E-01	6.30E-01	2.70E-02	---	6.30E-01	RME EPC is max detect	3 of 6
LPAHs				---			
HPAHs	2.64E-03	1.16E-02	1.16E-02	3.00E-01 ⁽³⁾	1.14E-02		
Total PAHs	2.64E-03	2.64E-03	2.64E-03	3.00E-01 ⁽³⁾	2.64E-03		

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-2 of TCEQ, 2006 and only the TCEQ Ecological Benchmarks for Water without the "dissolved" notation were included in the table.

(2) - Buchman, 2008.

(3) - Buchman, 2008 acute value for chemical class.

TABLE 14
EXPOSURE POINT CONCENTRATION (mg/L)
INTRACOASTAL WATERWAY SURFACE WATER (DISSOLVED METALS)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
Aluminum	6.48E-02	4.70E-02	4.70E-02	---	4.70E-02	RME EPC is max detect	1 of 4
Barium	2.63E-02	2.80E-02	2.30E-02	2.50E+01	2.80E-02	RME EPC is max detect	4 of 4
Boron	4.79E+00	4.99E+00	4.30E+00	1.20E+00 ⁽²⁾	4.99E+00	RME EPC is max detect	4 of 4
Lithium	2.10E-01	2.20E-01	2.00E-01	---	2.20E-01	RME EPC is max detect	4 of 4
Manganese	4.85E-03	6.00E-03	2.50E-03	1.00E-01 ⁽²⁾	6.00E-03	RME EPC is max detect	4 of 4
Nickel	2.63E-03	3.30E-03	1.30E-03	1.31E-02	3.30E-03	RME EPC is max detect	4 of 4
Selenium	4.25E-02	6.30E-02	2.80E-02	1.36E-01	6.30E-02	RME EPC is max detect	4 of 4
Strontium	8.04E+00	8.47E+00	7.36E+00	---	8.47E+00	RME EPC is max detect	4 of 4

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-2 of TCEQ.

(2) - Buchman, 2008.

TABLE 15
EXPOSURE POINT CONCENTRATION (mg/L)
INTRACOASTAL WATERWAY BACKGROUND SURFACE WATER (DISSOLVED METALS)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water	RME EPC	Statistic Used	# of Detects/# of Samples
Barium	1.65E-02	1.90E-02	1.20E-02	2.50E+01	1.90E-02	RME EPC is max detect	4 of 4
Boron	3.98E+00	4.33E+00	3.04E+00	1.20E+00 ⁽²⁾	4.33E+00	RME EPC is max detect	4 of 4
Chromium	7.38E-02	7.80E-02	6.40E-02	1.03E-01	7.80E-02	RME EPC is max detect	4 of 4
Iron	5.40E-02	6.00E-02	6.00E-02	5.00E-02 ⁽²⁾	6.00E-02	RME EPC is max detect	1 of 4
Lithium	2.90E-01	3.90E-01	1.90E-01	---	3.90E-01	RME EPC is max detect	4 of 4
Manganese	1.53E-02	1.80E-02	1.10E-02	1.00E-01 ⁽²⁾	1.80E-02	RME EPC is max detect	4 of 4
Molybdenum	3.68E-03	3.90E-03	3.90E-03	2.30E-02 ⁽²⁾	3.90E-03	RME EPC is max detect	1 of 4
Silver	5.23E-03	5.80E-03	4.30E-03	1.90E-04	5.80E-03	RME EPC is max detect	4 of 4
Strontium	6.84E+00	7.46E+00	5.20E+00	---	7.46E+00	RME EPC is max detect	4 of 4
Vanadium	1.23E-02	1.50E-02	9.30E-03	5.00E-02 ⁽²⁾	1.50E-02	RME EPC is max detect	4 of 4

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) - From Table 3-2 of TCEQ.

(2) - Buchman, 2008.

TABLE 16
EXPOSURE POINT CONCENTRATION (mg/L)
WETLAND SURFACE WATER (DISSOLVED METALS)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
Barium	3.20E-04	3.50E-01	1.40E-01	2.50E+01	3.50E-01	RME EPC is max detect	4 of 4
Boron	2.70E-02	2.75E+00	8.50E-01	1.20E+00 ⁽²⁾	2.75E+00	RME EPC is max detect	4 of 4
Chromium	1.20E-03	3.70E-02	1.90E-02	1.03E-01	3.70E-02	RME EPC is max detect	2 of 4
Copper	2.50E-03	1.10E-02	5.30E-03	3.60E-03	1.10E-02	RME EPC is max detect	3 of 4
Lithium	3.50E-03	2.80E-01	5.70E-02	---	2.80E-01	RME EPC is max detect	4 of 4
Manganese	6.00E-04	3.30E-01	2.50E-02	1.00E-01 ⁽²⁾	3.30E-01	RME EPC is max detect	4 of 4
Molybdenum	2.70E-03	1.70E-02	5.40E-03	2.30E-02 ⁽²⁾	1.70E-02	RME EPC is max detect	3 of 4
Nickel	4.50E-04	1.30E-03	4.90E-04	1.31E-02	1.30E-03	RME EPC is max detect	2 of 4
Strontium	9.40E-04	7.01E+00	1.89E+00	---	7.01E+00	RME EPC is max detect	4 of 4

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) From Table 3-2 of TCEQ, 2006.

(2) - Buchman, 2008.

TABLE 17
EXPOSURE POINT CONCENTRATION (mg/L)
POND SURFACE WATER (DISSOLVED METALS)

Chemicals of Interest ⁺	Average	Max Detection	Min Detection	TCEQ Ecological Benchmark for Water ⁽¹⁾	RME EPC	Statistic Used	# of Detects/# of Samples
Antimony	3.50E-03	6.30E-03	3.10E-03	5.00E-01 ⁽²⁾		RME EPC is max detect	3 of 6
Barium	1.25E-01	1.30E-01	1.20E-01	25		RME EPC is max detect	6 of 6
Boron	2.79E+00	3.33E+00	2.36E+00	1.20E+00 ⁽²⁾		RME EPC is max detect	6 of 6
Lithium	1.45E-01	2.20E-01	8.00E-02	---		RME EPC is max detect	6 of 6
Manganese	4.65E-01	1.06E+00	6.60E-02	1.00E-01 ⁽²⁾		RME EPC is max detect	6 of 6
Molybdenum	1.01E-02	1.90E-02	1.80E-02	2.30E-02 ⁽²⁾		RME EPC is max detect	3 of 6
Nickel	1.43E-03	2.60E-03	1.90E-03	0.131		RME EPC is max detect	3 of 6
Silver	1.83E-03	2.90E-03	9.40E-04	0.00019		RME EPC is max detect	6 of 6
Strontium	4.32E+00	6.97E+00	1.78E+00	---		RME EPC is max detect	6 of 6
Thallium	1.53E-03	3.20E-03	1.40E-03	0.0213		RME EPC is max detect	3 of 6
Vanadium	7.58E-04	2.10E-03	2.10E-03	5.00E-02 ⁽²⁾		RME EPC is max detect	1 of 6

Notes:

⁺ Chemicals of interest are any chemical measured in at least one sample.

(1) From Table 3-2 of TCEQ, 2006.

(2) - Buchman, 2008.

TABLE 18
TERRESTRIAL HABITAT ASSESSMENT AND MEASUREMENT ENDPOINTS

Receptor Group	Receptor of Potential Concern	Assessment Endpoint for SLERA	Ecological Risk Question	Testable Hypothesis for SLERA	Measurement Endpoint
Invertebrates	Earthworm	Protection of soil invertebrate community from uptake and direct toxic effects on detritivore abundance, diversity, productivity due to chemicals in soil.	1) Does exposure to chemicals in soil adversely affect the abundance, diversity, productivity, and function? 2) Do soil-to-earthworm BAFs suggest uptake of chemicals?	Average and 95%UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate. 3) Evaluate likelihood of localized effects (maximum concentration).
Small mammalian herbivore	Deer mouse	Protection of the small mammal survival, growth, and reproduction due to uptake of chemicals in soil.	1) Does exposure to chemicals in soil adversely affect the survival, growth, and reproduction? 2) Do soil-to-mammal BAFs suggest uptake of chemicals?	Average and 95% UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Mammalian predator	Coyote	Protection of the mammalian predator survival, growth, and reproduction due to the uptake of chemicals in prey items.	1) Does exposure to chemicals in soil adversely affect the survival, growth, and reproduction? 2) Do soil-to-mammal BAFs suggest uptake of chemicals?	Average and 95% UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Reptilian predator	Rat snake	Protection of the reptilian predator survival, growth, and reproduction due to the uptake of chemicals in prey items.	1) Does exposure to chemicals in soil adversely affect the survival, growth, and reproduction? 2) Do soil-to-mammal BAFs suggest uptake of chemicals?	Average and 95% UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Avian herbivore/omnivore	American robin	Protection of the omnivorous avian survival, growth, and reproduction due to uptake of chemicals in soil.	1) Does exposure to chemicals in soil adversely affect the survival, growth, and reproduction? 2) Do soil-to-avian omnivore BAFs suggest uptake of chemicals?	Average and 95% UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Avian predator	Red-tailed hawk	Protection of carnivorous avian community population abundance, diversity, and productivity due to uptake of chemicals in prey items.	1) Does exposure to chemicals in soil adversely affect the survival, growth, and reproduction? 2) Do soil-to-higher trophic level BAFs suggest uptake of chemicals and/or bioaccumulation?	Average and 95% UCL soil concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in soil to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.

Notes:

SLERA -- Screening-Level Ecological Risk Assessment

BAF -- biota accumulation factor

BSAF -- biota to sediment accumulation factor

NOAEL -- no observable adverse effects level

95% UCL -- 95 percent upper confidence limit on the mean

TABLE 19
ESTUARINE WETLAND AND AQUATIC HABITAT ASSESSMENT AND MEASUREMENT ENDPOINTS

Receptor Group	Receptor of Potential Concern	Assessment Endpoint for SLERA	Ecological Risk Question	Testable Hypothesis for SLERA	Measurement Endpoint
Benthos and zooplankton	Polychaetes	Protection of benthic invertebrate community from uptake and direct toxic effects on abundance, diversity, and productivity due to chemicals in sediment.	1) Does exposure to chemicals in sediment adversely affect the abundance, diversity, productivity, and function? 2) Do sediment-to-biota BSAFs suggest uptake of chemicals?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate. 3) Evaluate likelihood of localized effects (maximum concentration).
Fish and shellfish	Fiddler crab	Protection of invertebrate community abundance, diversity, and productivity due to uptake of chemicals in sediment.	1) Does exposure to chemical in sediment adversely affect the survival, reproduction, or growth? 2) Do sediment-to-biota BSAFs suggest uptake of chemicals?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
	Killifish	Protection of localized herbivorous fish survival, growth, and reproduction due to uptake of chemicals in sediment and biota.	1) Does exposure to chemical in sediment adversely affect the survival, reproduction, or growth? 2) Do sediment-to-biota BSAFs suggest uptake of chemicals?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Carnivorous fish	Black drum	Protection of carnivorous fish survival, growth, and reproduction due to uptake of chemicals in sediment and prey items.	1) Does exposure to chemicals in sediment and/or prey items adversely affect the survival, growth, and reproduction of a first order carnivorous fish? 2) Do sediment-to-biota BSAFs suggest uptake of chemicals and/or bioaccumulation?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
	Spotted seatrout	Protection of carnivorous fish survival, growth, and reproduction due to uptake of chemicals in prey items.	1) Does exposure to chemicals in prey items adversely affect the survival, growth, and reproduction of a second order carnivorous fish? 2) Does sediment-to-biota BSAF suggest bioaccumulation?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
Avian predator	Sandpiper	Protection of carnivorous avian survival, growth, and reproduction due to uptake of chemicals in sediment and prey items.	1) Does exposure to chemicals in sediment and/or prey items adversely affect the survival, growth, and reproduction of a first order carnivore? 2) Does sediment-to-biota BSAF suggest uptake or bioaccumulation?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.
	Green heron	Protection of carnivorous avian survival, growth and reproduction due to uptake of chemicals in prey items.	1) Does exposure to chemicals in prey items adversely affect the survival, growth, and reproduction of a second order carnivore? 2) Does sediment-to-biota BSAF suggest bioaccumulation?	Average and 95% UCL sediment concentrations do not exceed screening criteria.	1) Comparison of average and 95% UCL concentration for each compound measured at the Site in sediment to receptor-specific screening level based on NOAELs available in the literature. 2) Evaluate compound's ability to bioconcentrate.

Notes:

SLERA -- Screening-Level Ecological Risk Assessment

BAF -- biota accumulation factor

BSAF -- biota to sediment accumulation factor

NOAEL -- no observable adverse effects level

95% UCL -- 95 percent upper confidence limit on the mean

TABLE 20
BACKGROUND COMPARISONS

HYPOTHESIS TESTED: ARE SITE DATA STATISTICALLY DIFFERENT THAN BACKGROUND DATA? ⁽¹⁾							
CHEMICAL OF INTEREST*	SOUTH SURFACE SOIL	SOUTH SOIL	NORTH SURFACE SOIL	NORTH SOIL	ICWW SEDIMENT	WETLANDS SEDIMENT	POND SEDIMENT
Aluminum	NA	NA	NA	NA	Yes*	NA	NA
Antimony	No	No	No	No	Yes*	No	No
Arsenic	No	No	No	No	Yes*	No	Yes*
Barium	No	No	Yes*	Yes*	No	Yes*	No
Beryllium	NA	NA	NA	NA	Yes*	NA	NA
Boron	NA	NA	NA	NA	Yes*	NA	NA
Cadmium	No	No	Yes	Yes*	NA	Yes	Yes
Chromium	No	No	No	No	NA	No	No
Cobalt	NA	NA	NA	NA	Yes*	NA	NA
Copper	Yes	No	No	No	No	No	No
Iron	NA	NA	NA	NA	No	NA	No
Lead	Yes	No	No	No	No	No	Yes
Lithium	Yes*	Yes*	Yes*	No	Yes*	No	No
Manganese	Yes*	Yes*	No	No	No	No	Yes
Mercury	No	No	Yes*	Yes*	No	No	NA
Molybdenum	Yes	No	No	No	No	No	Yes*
Nickel	NA	NA	NA	NA	No	NA	NA
Strontium	NA	NA	NA	NA	Yes*	NA	NA
Titanium	NA	NA	NA	NA	Yes*	NA	NA
Vanadium	NA	NA	NA	NA	Yes*	NA	NA
Zinc	Yes	No	No	No	No	No	No

Notes:

⁽¹⁾ Detailed statistical procedures are outlined in Section 2.7 and calculations are provided in Appendix B.

* Statistical difference is due to background being greater than site.

+ Chemicals of interest are any chemical measured in at least one sample.

NA - No analysis was performed for compound in background.

TABLE 21
COPECS IDENTIFIED IN STEP 1 AND QUANTITATIVELY EVALUATED IN STEP 2*

SOUTH AREA SOIL	NORTH AREA SOIL	BACKGROUND AREA SOIL	ICWW SEDIMENT	BACKGROUND ICWW SEDIMENT	WETLANDS SEDIMENT	POND SEDIMENT
2-Methylnaphthalene 4,4'-DDD 4,4'-DDE 4,4'-DDT Acenaphthene Acenaphthylene Anthracene Aroclor-1254 Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Boron Chrysene Cobalt Copper Dibenz(a,h)anthracene Dieldrin Endrin Aldehyde Endrin Ketone Fluoranthene Fluorene gamma-Chlordane Indeno(1,2,3-cd)pyrene Lead Molybdenum Naphthalene Nickel Phenanthrene Pyrene Vanadium Zinc LPAH HPAH TOTAL PAHs	2-Methylnaphthalene 4,4'-DDE 4,4'-DDT Acenaphthene Acenaphthylene Anthracene Aroclor-1254 Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Boron Cadmium Chrysene Dibenz(a,h)anthracene Dieldrin Endrin Endrin Ketone Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Iron Naphthalene Nickel Phenanthrene Pyrene Vanadium LPAH HPAH TOTAL PAHs	Antimony Arsenic Barium Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Cadmium Chromium Chrysene Copper Fluoranthene Indeno(1,2,3-cd)pyrene Lead Lithium Manganese Mercury Molybdenum Phenanthrene Pyrene Zinc LPAH HPAH TOTAL PAHs	2-Methylnaphthalene 4,4'-DDT Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a,h)anthracene Fluoranthene Fluorene gamma-Chlordane Hexachlorobenzene Indeno(1,2,3-cd)pyrene Phenanthrene Pyrene LPAH HPAH TOTAL PAHs	4,4'-DDT Arsenic Benzo(b)fluoranthene Copper Mercury Nickel Zinc LPAH HPAH TOTAL PAHs	2-Methylnaphthalene 4,4'-DDT Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Cadmium Chrysene Nickel Phenanthrene Pyrene LPAH HPAH TOTAL PAHs	4,4'-DDD 4,4'-DDT Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Cadmium Chrysene Nickel Phenanthrene Pyrene LPAH HPAH TOTAL PAHs

Notes:

* Surface water is not included in the table because they were evaluated differently given the lack of screening criteria and toxicity reference values.

TABLE 22
TERRESTRIAL EXPOSURE PARAMETERS

PARAMETER	Deer Mouse		Coyote		Rat Snake		American Robin		Red-Tailed Hawk	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Ingestion Rate for soil (kg/day)	2.13E-05	EPA, 1999*	NA		1.45E-04	EPA, 1993 ⁺	1.14E-03	EPA, 1999*	NA	
Bioavailability Factor in soil (unitless)	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997
Area Use Factor (unitless)	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997
Body Weight (kg)	1.48E-02	EPA, 1999	1.55E+01	EPA, 1993	1.39E-01	EPA, 1993	8.00E-02	EPA, 1999	9.60E-01	EPA, 1999
Ingestion Rate for food (kg/day)	8.87E-03	EPA, 1999*	1.55	EPA, 1993*	2.78E-03	EPA, 1993*	3.52E-02	EPA, 1999*	1.78E-01	EPA, 1999*
Dietary Fraction for arthropods (unitless)	5.60E-01	EPA, 1993	NA		2.00E-01	EPA, 1993	4.60E-01	EPA, 1993	NA	
Dietary Fraction for plants, etc. (unitless)	4.40E-01	EPA, 1993	NA		NA		8.00E-02	EPA, 1993	NA	
Dietary Fraction of small mammals (unitless)	NA		7.50E-01	EPA, 1993	6.20E-01	EPA, 1993	NA		7.85E-01	EPA, 1993
Dietary Fraction of birds (unitless)	NA		2.50E-01	EPA, 1993	1.80E-01	EPA, 1993	NA		3.80E-01	EPA, 1993
Dietary Fraction of earthworms (unitless)	NA		NA		NA		4.60E-01	EPA, 1993	NA	

Notes:

* Normalized for body weight.

NA - not applicable.

⁺ Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

TABLE 23
ESTUARINE WETLAND AND AQUATIC EXPOSURE PARAMETERS

PARAMETER	Fiddler Crab		Killifish		Black Drum		Spotted Seatrout		Sandpiper		Green Heron	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Ingestion Rate for soil (kg/day)	1.16E-08	Cammen, 1979			2.60E-03	Neill, 1998+	NA		2.10E-02	EPA, 1993	NA	
Bioavailability Factor in soil (unitless)	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997
Area Use Factor (unitless)	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997	1	EPA, 1997
Body Weight (kg)	9.00E-03	*			1.24	Alcoa, 2000	1.00E+00	TPWD, 2009**	2.15E-01	Dunning, 1993	3.75E-01	Dunning, 1993
Ingestion Rate for food (kg/day)	1.16E-08	Cammen, 1979			2.60E-02	Neill, 1998	2.60E-02	Prof. Judg.**	1.08E-01	EPA, 1993	1.13E-01	EPA, 1993
Dietary Fraction for invertebrates (unitless)	1.00E+00	TPWD, 2009**			NA		NA		NA		NA	
Dietary Fraction for worms (unitless)	NA				3.33E-01	Prof. Judg.**	NA		6.00E-01	Prof. Judg.**	NA	
Dietary Fraction of crabs (unitless)	NA				3.33E-01	Prof. Judg.**	NA		4.00E-01	Prof. Judg.**	2.50E-01	Kent, 1986
Dietary Fraction of fish (unitless)	NA				3.33E-01	Prof. Judg.**	1.00E+00	TPWD, 2009**	NA		7.50E-01	Kent, 1986

Notes:

* Estimated based on width/length equation for fiddler crabs.

** Because of the lack of information on dietary fractions for different species, best professional judgment was used as the basis for the assumption.

NA - not applicable.

* Sediment ingestion was assumed to be 10% of dietary intake.

** <http://www.tpwd.state.tx.us>

TABLE 24
ECOLOGICAL HAZARD QUOTIENTS EXCEEDING ONE FOR THE SOUTH AREA

MEDIA	RECEPTOR	CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN	TOXICITY VALUE	AVERAGE HQ	RME HQ
Soil	Earthworm	4,4'-DDD	NOAEL	1.78E-01	1.16E+00
		Zinc	NOAEL	3.62E+00	6.79E+00
	Deer Mouse	Aroclor-1254	NOAEL	5.07E-01	1.83E+00
		Copper	NOAEL	5.21E-01	1.01E+00
		Zinc	NOAEL	1.09E+00	2.05E+00
	Coyote	None	NOAEL		
	Rat Snake	None	NOAEL		
	American Robin	Aroclor-1254	NOAEL	5.32E-01	1.94E+00
		Lead	NOAEL	1.06E+00	1.61E+00
		Zinc	NOAEL	1.62E+00	2.95E+00
	Red-Tailed Hawk	None	NOAEL		
	Earthworm	Zinc	LOAEL	8.06E-01	1.52E+00
	Deer Mouse	None	LOAEL		
	Coyote	None	LOAEL		
	Rat Snake	None	LOAEL		
	American Robin	None	LOAEL		
	Red-Tailed Hawk	None	LOAEL		
Intracoastal Waterway Sediment	Capitella Capitata	4,4'-DDT	ERL	4.11E-01	2.30E+00
		Benzo(a)anthracene	ERL	1.74E-01	1.15E+00
		Dibenz(a,h)anthracene	ERL	6.86E-01	3.23E+00
		Fluoranthene	ERL	1.88E-01	1.02E+00
		Fluorene	ERL	6.42E-01	1.28E+00
		gamma-Chlordane	ERL	6.26E-01	1.14E+00
		Hexachlorobenzene	AET	1.67E+00	2.10E+00
		Phenanthrene	ERL	3.11E-01	1.62E+00
		Pyrene	ERL	1.95E-01	1.02E+00
		HPAH	ERL	4.54E-01	2.22E+00
		Total PAHs	ERL	2.24E-01	1.06E+00
	Capitella Capitata	None	ERM		
	Fiddler Crab	None	NOAEL		
	Black Drum	None	NOAEL		
	Spotted Seatrout	None	NOAEL		
	Sandpiper	None	NOAEL		
	Green Heron	None	NOAEL		

Notes:

AET - apparent effects threshold

ERL - effects range low

ERM - effects range medium

HQ - hazard quotient

LOAEL - lowest observable adverse effects level

NOAEL - no observable adverse effects level

RME - reasonable maximum exposure

TABLE 25
ECOLOGICAL HAZARD QUOTIENTS EXCEEDING ONE FOR THE NORTH AREA

MEDIA	RECEPTOR	CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN	TOXICITY VALUE	AVERAGE HQ	RME HQ
Soil	Earthworm	None	NOAEL	<i>1.60E-01</i>	<i>1.12E+00</i>
	Deer Mouse	<i>Dieldrin</i>	<i>NOAEL</i>		
	Coyote	None	NOAEL		
	Rat Snake	None	NOAEL		
	American Robin	None	NOAEL		
	Red-Tailed Hawk	None	NOAEL		
	Earthworm	None	LOAEL		
	Deer Mouse	None	LOAEL		
	Coyote	None	LOAEL		
	Rat Snake	None	LOAEL		
	American Robin	None	LOAEL		
	Red-Tailed Hawk	None	LOAEL		
Wetlands Sediment	Capitella Capitata	<i>2-Methylnaphthalene</i>	<i>ERL</i>	<i>2.84E-01</i>	<i>1.02E+00</i>
		<i>4,4'-DDT</i>	<i>ERL</i>	<i>9.07E-01</i>	<i>2.12E+00</i>
		<i>Acenaphthylene</i>	<i>ERL</i>	<i>1.02E+00</i>	<i>3.93E+00</i>
		<i>Acenaphthene</i>	<i>ERL</i>	<i>7.02E-01</i>	<i>3.68E+00</i>
		<i>Anthracene</i>	<i>ERL</i>	<i>3.92E-01</i>	<i>1.57E+00</i>
		<i>Benzo(a)anthracene</i>	<i>ERL</i>	<i>2.36E-01</i>	<i>1.19E+00</i>
		<i>Benzo(a)pyrene</i>	<i>ERL</i>	<i>2.37E-01</i>	<i>1.09E+00</i>
		<i>Benzo(g,h,i)perylene</i>	<i>AET</i>	<i>2.90E-01</i>	<i>1.11E+00</i>
		<i>Chrysene</i>	<i>ERL</i>	<i>5.55E-01</i>	<i>3.17E+00</i>
		<i>Dibenz(a,h)anthracene</i>	<i>ERL</i>	<i>3.14E+00</i>	<i>1.70E+01</i>
		<i>Endrin Aldehyde</i>	<i>ERL</i>	<i>3.90E-01</i>	<i>1.10E+00</i>
		<i>Fluoranthene</i>	<i>ERL</i>	<i>1.77E-01</i>	<i>1.04E+00</i>
		<i>Fluorene</i>	<i>ERL</i>	<i>9.63E-01</i>	<i>3.29E+00</i>
		<i>gamma-Chlordane</i>	<i>ERL</i>	<i>7.76E-01</i>	<i>1.57E+00</i>
		<i>Indeno(1,2,3-cd)pyrene</i>	<i>AET</i>	<i>3.28E-01</i>	<i>1.28E+00</i>
		<i>Phenanthrene</i>	<i>ERL</i>	<i>3.16E-01</i>	<i>1.77E+00</i>
		<i>LPAH</i>	<i>ERL</i>	<i>3.58E-01</i>	<i>1.66E+00</i>
		<i>HPAH</i>	<i>ERL</i>	<i>8.10E-01</i>	<i>3.83E+00</i>
		<i>Total PAHs</i>	<i>ERL</i>	<i>3.91E-01</i>	<i>1.85E+00</i>
	Fiddler Crab	None	NOAEL	7.65E-01	4.15E+00
	Sandpiper	None	NOAEL		
	Green Heron	None	NOAEL		
	Capitella Capitata	Dibenz(a,h)anthracene	ERM		
	Fiddler Crab	None	LOAEL		
	Sandpiper	None	LOAEL		
	Green Heron	None	LOAEL		
Pond Sediment	Capitella Capitata	<i>4,4-DDT*</i>	<i>ERL</i>	<i>4.16E+00</i>	<i>1.47E+00</i>
	Fiddler Crab	None	NOAEL	<i>8.98E-01</i>	<i>1.13E+00</i>
	Sandpiper	<i>Nickel</i>	<i>NOAEL</i>		
	Green Heron	None	NOAEL		
	Capitella Capitata	None	ERM		
	Fiddler Crab	None	LOAEL		
	Sandpiper	None	LOAEL		
	Green Heron	None	LOAEL		

Notes:

* Average HQ is higher than RME HQ because the RME concentration was the maximum detected while the average concentration calculation contained 1/2 sample quantitation limits which sometimes were higher than the max. detect.

ERL - effects range low

ERM - effects range medium

HQ - hazard quotient

LOAEL - lowest observable adverse effects level

NOAEL - no observable adverse effects level

RME - reasonable maximum exposure

TABLE 26
ECOLOGICAL HAZARD QUOTIENTS EXCEEDING ONE FOR THE BACKGROUND AREAS

MEDIA	RECEPTOR	CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN	TOXICITY VALUE	AVERAGE HQ	RME HQ
Soil	Earthworm	<i>Barium</i>	NOAEL	1.01E+00	1.52E+00
		<i>Zinc</i>	NOAEL	2.06E+00	8.08E+00
	Deer Mouse	<i>Antimony</i>	NOAEL	9.76E-01	2.24E+00
		<i>Barium</i>	NOAEL	7.38E-01	1.11E+00
		<i>Zinc</i>	NOAEL	6.20E-01	2.43E+00
	Coyote	None	NOAEL		
	Rat Snake	None	NOAEL		
	American Robin	<i>Antimony</i>	NOAEL	8.41E-01	1.93E+00
		<i>Barium</i>	NOAEL	6.98E-01	1.05E+00
		<i>Zinc</i>	NOAEL	9.00E-01	3.53E+00
	Red-Tailed Hawk	None	NOAEL		
	Earthworm	Barium	LOAEL	1.01E+00	1.52E+00
		Zinc	LOAEL	4.59E-01	1.80E+00
	Deer Mouse	None	LOAEL		
	Coyote	None	LOAEL		
	Rat Snake	None	LOAEL		
	American Robin	None	LOAEL		
	Red-Tailed Hawk	None	LOAEL		
Intracoastal Waterway Sediment	Capitella Capitata	None	NOAEL		
	Fiddler Crab	None	NOAEL		
	Black Drum	None	NOAEL		
	Spotted Seatrout	None	NOAEL		
	Sandpiper	None	NOAEL		
	Green Heron	None	NOAEL		

Notes:

AET - apparent effects threshold

HQ - hazard quotient

LOAEL - lowest observable adverse effects level

NOAEL - no observable adverse effects level

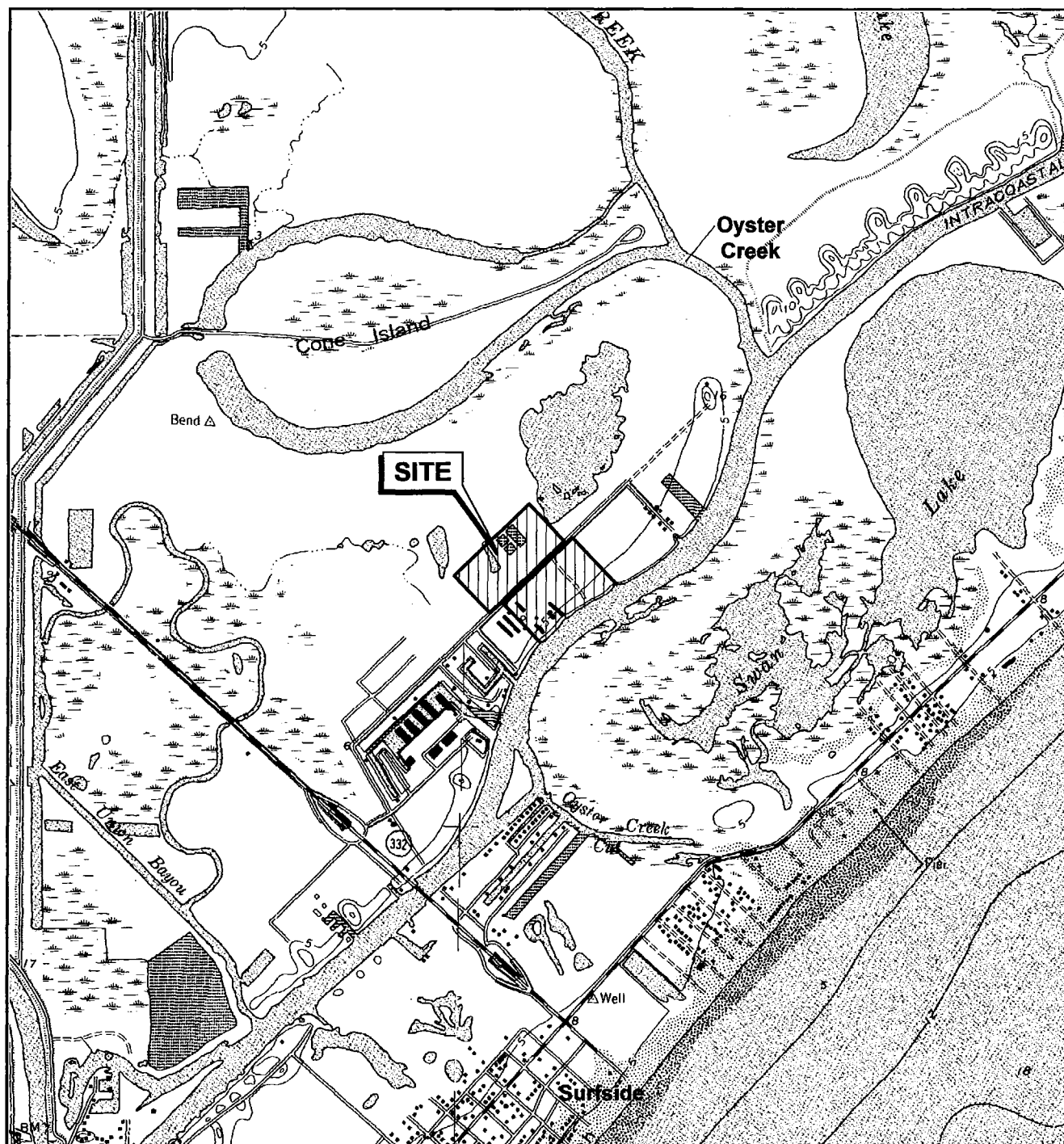
RME - reasonable maximum exposure

TABLE 27
SUMMARY OF SURFACE WATER DATA AND ECOLOGICAL BENCHMARKS

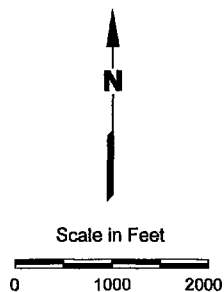
MEDIA	CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN	MAX CONCENTRATION (mg/L)	ECO BENCHMARK (mg/L)	LC₅₀ (mg/L)*
Intracoastal Waterway Surface Water	Boron (dissolved)	4.99	1.2	86.5
Intracoastal Waterway Surface Water Background Area	Boron (dissolved)	4.33	1.2	86.5
	4,4'-DDT	0.000013	0.000001	0.00045
	Iron (dissolved)	0.06	0.05	4
	Silver (dissolved)	0.0058	0.00019	1.45
Wetland Area Surface Water	Acrolein	0.00929	0.005	0.43
	Boron (dissolved)	2.75	1.2	86.5
	Copper (dissolved)	0.011	0.0036	0.368
	Manganese (dissolved)	0.33	0.1	50
Pond Surface Water	Boron (dissolved)	3.33	1.2	86.5
	Manganese (dissolved)	1.06	0.1	50
	Silver (dissolved)	0.0029	0.00019	1.45

Notes:

* Additional discussion related to the LC50 concentration provided here can be found in Section 3.4.8 of the SLERA report. All values from EPA, 2009.



QUADRANGLE LOCATION



GULFCO MARINE MAINTENANCE **FREEPORT, BRAZORIA COUNTY, TEXAS**

Figure 1 **SITE LOCATION MAP**

PROJECT: 1352

BY: ZGK

REVISIONS

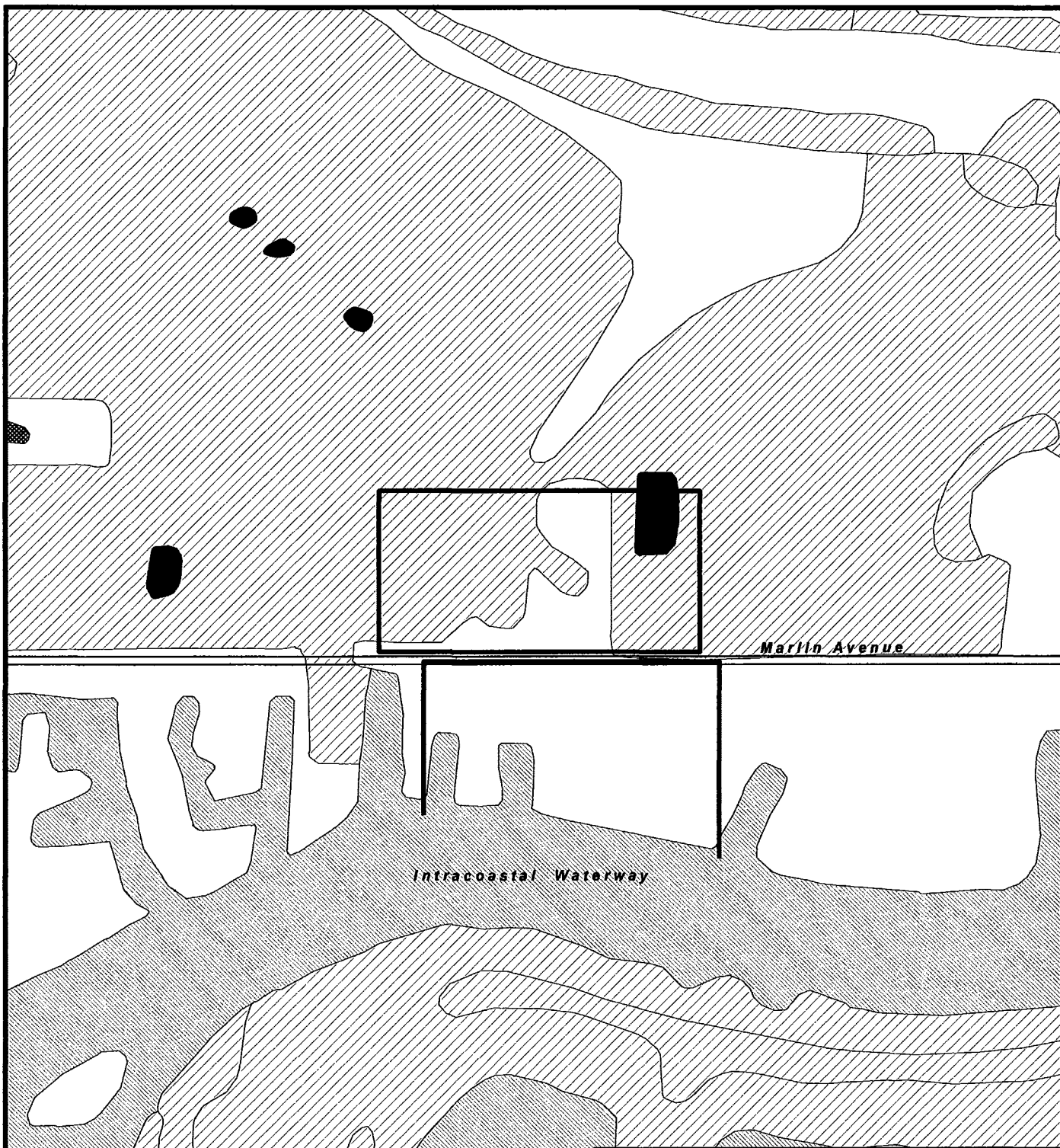
DATE: MAY, 2009

CHECKED: EFP

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

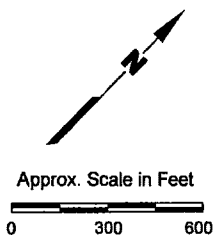
Source:

Base map taken from <http://www.tnris.state.tx.us> Freeport, Texas 7.5 min.
U.S.G.S. quadrangle, 1974.



EXPLANATION

- Approx. Site Boundary
- Upland Area
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Pond



Source:
U.S. Fish & Wildlife Service, Wetlands Online Mapper, 2008.

GULFCO MARINE MAINTENANCE FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 2 WETLAND MAP

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2009	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Primary
Release
Mechanism(s)

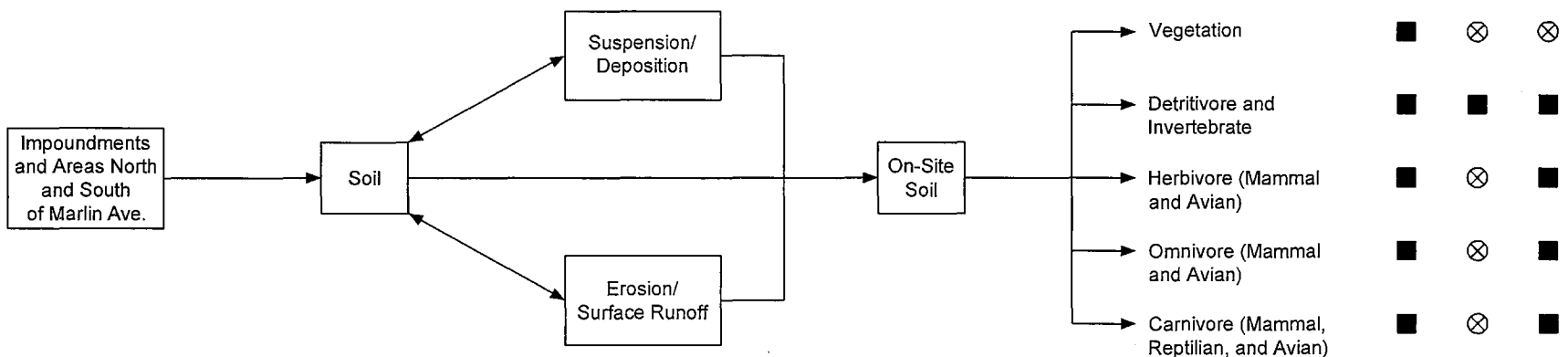
Secondary
Source

Secondary
Release
Mechanism(s)

Exposure
Medium

Potential
Receptors

Potential
Exposure Pathways



LEGEND

- Pathway is potentially complete
- ⊗ Pathway is incomplete
- ⊗ Pathway is not viable

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 4

**TERRESTRIAL ECOSYSTEM
CONCEPTUAL SITE MODEL**

PROJECT: 1352

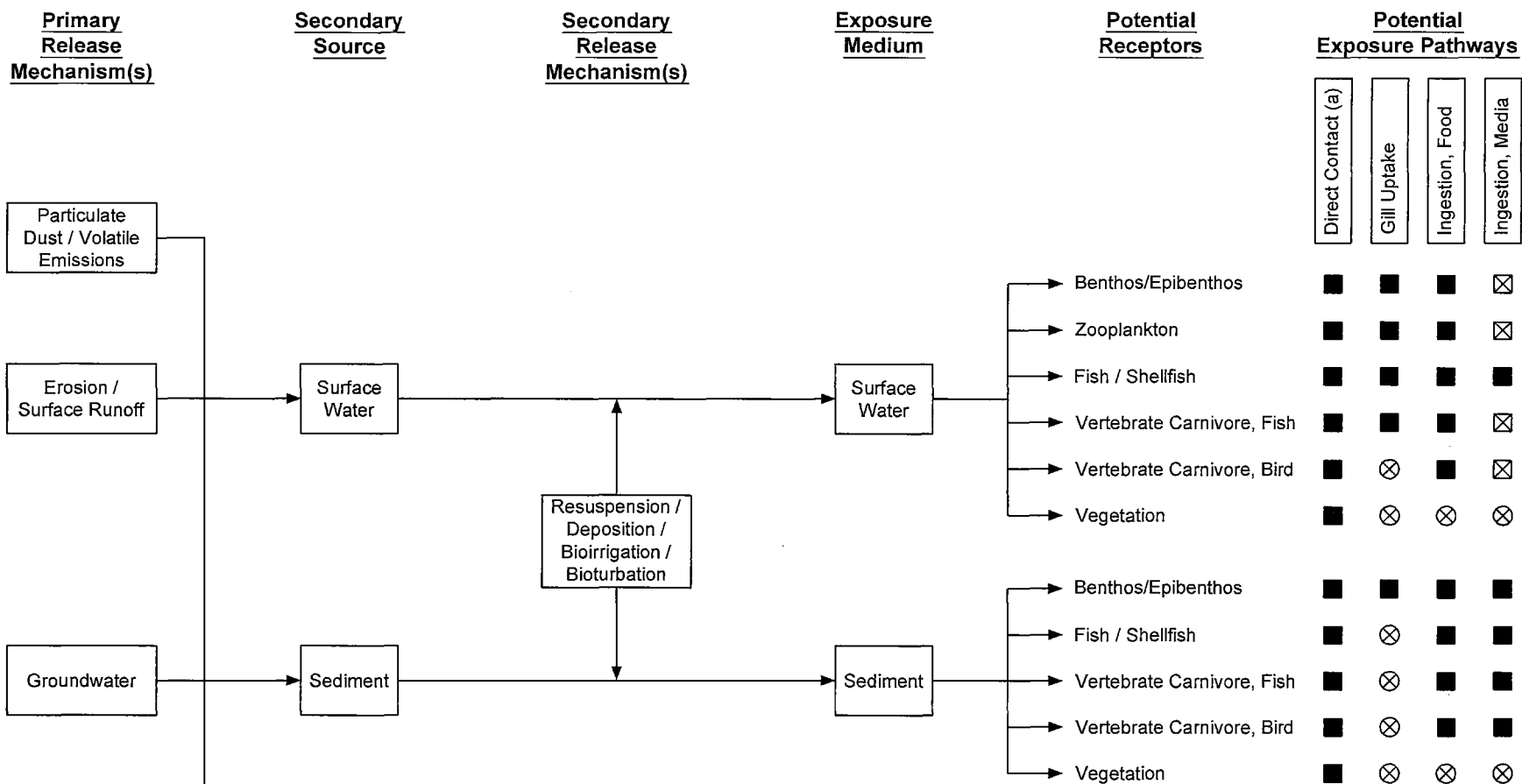
BY: ZGK

REVISIONS

DATE: MAY, 2009

CHECKED: KHT

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



LEGEND

- Pathway is potentially complete
- ⊗ Pathway is incomplete
- ⊗ Pathway is not viable
- (a) Direct contact includes dermal absorption

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 5

AQUATIC ECOSYSTEM CONCEPTUAL SITE MODEL

PROJECT: 1352

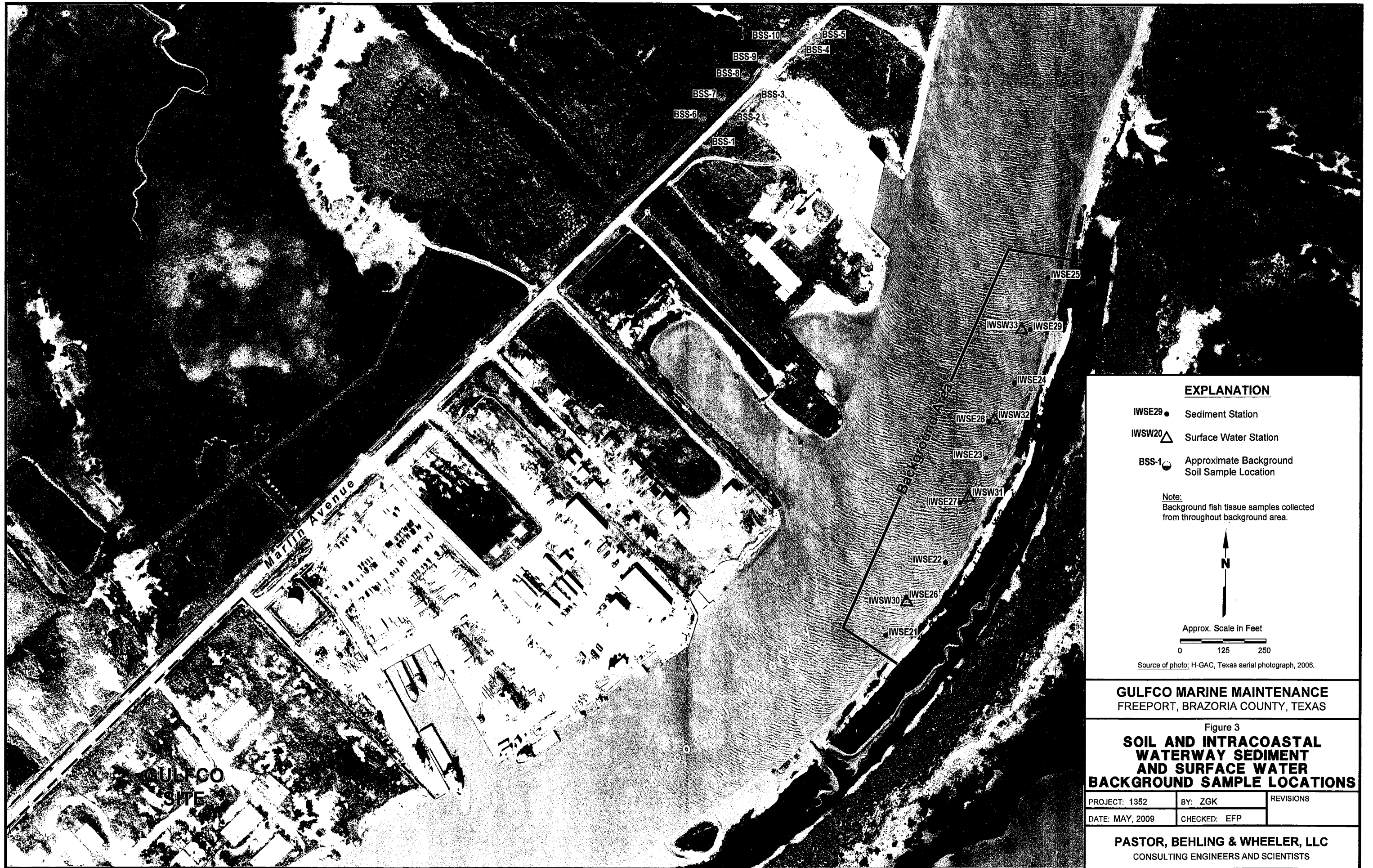
BY: ZGK

REVISIONS

DATE: MAY, 2009

CHECKED: KHT

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



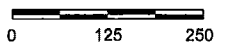
EXPLANATION

- IWSE29 ● Sediment Station
IWSW20 ▲ Surface Water Station
BSS-1 ● Approximate Background Soil Sample Location

Note:
Background fish tissue samples collected from throughout background area.



Approx. Scale in Feet



Source of photo: H-GAC, Texas aerial photograph, 2008.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 3
**SOIL AND INTRACOASTAL
WATERWAY SEDIMENT
AND SURFACE WATER
BACKGROUND SAMPLE LOCATIONS**

PROJECT: 1352	BY: ZGK	REVISIONS
DATE: MAY, 2009	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX A
PRO UCL OUTPUT

APPENDIX A-1

SOUTH OF MARLIN SURFACE SOIL

[illegible]

Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL			0.0784						
Result or 1/2 SDL (4,4'-ddd)												
General Statistics												
Number of Valid Samples			83			Number of Unique Samples			55			
Raw Statistics					Log-transformed Statistics							
Minimum			1.1750E-4			Minimum of Log Data			-9.049			
Maximum			0.0243			Maximum of Log Data			-3.717			
Mean			7.8940E-4			Mean of log Data			-8.519			
Median			1.3300E-4			SD of log Data			1.087			
SD			0.0030									
Coefficient of Variation			3.894									
Skewness			6.54									
Relevant UCL Statistics												
Normal Distribution Test					Lognormal Distribution Test							
Lilliefors Test Statistic			0.435			Lilliefors Test Statistic			0.428			
Lilliefors Critical Value			0.0973			Lilliefors Critical Value			0.0973			
Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
Assuming Normal Distribution					Assuming Lognormal Distribution							
95% Student's-t UCL			0.0013			95% H-UCL			4.7561E-4			
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					5.8317E-4		
95% Adjusted-CLT UCL			0.0016			97.5% Chebyshev (MVUE) UCL			6.8130E-4			
95% Modified-t UCL			0.0013			99% Chebyshev (MVUE) UCL			8.7406E-4			
Gamma Distribution Test					Data Distribution							
k star (bias corrected)			0.458			Data do not follow a Discernable Distribution (0.05)						
Theta Star			0.0017									
nu star			76.06									
Approximate Chi Square Value (.05)			56.97			Nonparametric Statistics						
Adjusted Level of Significance			0.0471			95% CLT UCL			0.0013			
Adjusted Chi Square Value			56.68			95% Jackknife UCL			0.0013			
						95% Standard Bootstrap UCL			0.0013			
Anderson-Darling Test Statistic			22.2			95% Bootstrap-t UCL			0.0031			
Anderson-Darling 5% Critical Value			0.827			95% Hall's Bootstrap UCL			0.0034			
Kolmogorov-Smirnov Test Statistic			0.467			95% Percentile Bootstrap UCL			0.0014			
Kolmogorov-Smirnov 5% Critical Value			0.104			95% BCA Bootstrap UCL			0.0017			
Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL			0.0022				
					97.5% Chebyshev(Mean, Sd) UCL			0.0029				
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL			0.0041				
95% Approximate Gamma UCL			0.0010									
95% Adjusted Gamma UCL			0.0010									
Potential UCL to Use					Use 97.5% Chebyshev (Mean, Sd) UCL					0.0029		
Result or 1/2 SDL (4,4'-dde)												

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	65
Raw Statistics		Log-transformed Statistics	
Minimum	1.6300E-4	Minimum of Log Data	-8.722
Maximum	0.0693	Maximum of Log Data	-2.669
Mean	0.0019	Mean of log Data	-7.87
Median	1.8900E-4	SD of log Data	1.305
SD	0.0080		
Coefficient of Variation	4.214		
Skewness	7.636		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.414	Lilliefors Test Statistic	0.358
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0033	95% H-UCL	0.0012
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0015
95% Adjusted-CLT UCL	0.0041	97.5% Chebyshev (MVUE) UCL	0.0019
95% Modified-t UCL	0.0034	99% Chebyshev (MVUE) UCL	0.0025
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.402	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0047		
nu star	66.7		
Approximate Chi Square Value (.05)	48.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0033
Adjusted Chi Square Value	48.63	95% Jackknife UCL	0.0033
		95% Standard Bootstrap UCL	0.0033
Anderson-Darling Test Statistic	15.79	95% Bootstrap-t UCL	0.0083
Anderson-Darling 5% Critical Value	0.84	95% Hall's Bootstrap UCL	0.0083
Kolmogorov-Smirnov Test Statistic	0.364	95% Percentile Bootstrap UCL	0.0035
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.0046
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0057
		97.5% Chebyshev(Mean, Sd) UCL	0.0074
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0107
95% Approximate Gamma UCL	0.0026		
95% Adjusted Gamma UCL	0.0026		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0074
Result or 1/2 SDL (4,4'-ddt)			
General Statistics			
Number of Valid Samples	83	Number of Unique Samples	67
Raw Statistics		Log-transformed Statistics	
Minimum	6.2500E-5	Minimum of Log Data	-9.68

Maximum	0.0625	Maximum of Log Data	-2.773
Mean	0.0038	Mean of log Data	-7.704
Median	3.1700E-4	SD of log Data	2.095
SD	0.0092		
Coefficient of Variation	2.422		
Skewness	4.079		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.342	Lilliefors Test Statistic	0.255
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0055	95% H-UCL	0.0090
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0096
95% Adjusted-CLT UCL	0.006	97.5% Chebyshev (MVUE) UCL	0.0122
95% Modified-t UCL	0.0056	99% Chebyshev (MVUE) UCL	0.0173
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.315	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0122		
nu star	52.37		
Approximate Chi Square Value (.05)	36.75	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0055
Adjusted Chi Square Value	36.52	95% Jackknife UCL	0.0055
		95% Standard Bootstrap UCL	0.0055
Anderson-Darling Test Statistic	7.358	95% Bootstrap-t UCL	0.0063
Anderson-Darling 5% Critical Value	0.861	95% Hall's Bootstrap UCL	0.0066
Kolmogorov-Smirnov Test Statistic	0.235	95% Percentile Bootstrap UCL	0.0055
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	0.0061
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0082
		97.5% Chebyshev(Mean, Sd) UCL	0.0102
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.014
95% Approximate Gamma UCL	0.0054		
95% Adjusted Gamma UCL	0.0055		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.014

Result or 1/2 SDL (acenaphthene)

General Statistics

Number of Valid Samples	83	Number of Unique Samples	67
Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.438
Maximum	1.69	Maximum of Log Data	0.525
Mean	0.0595	Mean of log Data	-4.288
Median	0.0051	SD of log Data	1.443
SD	0.2		
Coefficient of Variation	3.372		

Skewness		7.061		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.392		Lilliefors Test Statistic	0.328
Lilliefors Critical Value	0.0973		Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0961		95% H-UCL	0.0597
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0734
95% Adjusted-CLT UCL	0.114		97.5% Chebyshev (MVUE) UCL	0.0887
95% Modified-t UCL	0.0989		99% Chebyshev (MVUE) UCL	0.119
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.434		Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.137			
nu star	72.06			
Approximate Chi Square Value (.05)	53.51		Nonparametric Statistics	
Adjusted Level of Significance	0.0471		95% CLT UCL	0.0956
Adjusted Chi Square Value	53.23		95% Jackknife UCL	0.0961
			95% Standard Bootstrap UCL	0.0952
Anderson-Darling Test Statistic	10.45		95% Bootstrap-t UCL	0.178
Anderson-Darling 5% Critical Value	0.832		95% Hall's Bootstrap UCL	0.236
Kolmogorov-Smirnov Test Statistic	0.313		95% Percentile Bootstrap UCL	0.0981
Kolmogorov-Smirnov 5% Critical Value	0.105		95% BCA Bootstrap UCL	0.119
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.155
			97.5% Chebyshev(Mean, Sd) UCL	0.197
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.278
95% Approximate Gamma UCL	0.0801			
95% Adjusted Gamma UCL	0.0805			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	0.197
Result or 1/2 SDL (acenaphthylene)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples	
			46	
Raw Statistics			Log-transformed Statistics	
Minimum	0.0049		Minimum of Log Data	-5.312
Maximum	0.935		Maximum of Log Data	-0.0672
Mean	0.0382		Mean of log Data	-4.444
Median	0.0057		SD of log Data	1.267
SD	0.11			
Coefficient of Variation	2.876			
Skewness	6.947			
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.381		Lilliefors Test Statistic	0.384

Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0582	95% H-UCL	0.0372
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0459
95% Adjusted-CLT UCL	0.0678	97.5% Chebyshev (MVUE) UCL	0.0546
95% Modified-t UCL	0.0598	99% Chebyshev (MVUE) UCL	0.0717
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.522	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0731		
nu star	86.68		
Approximate Chi Square Value (.05)	66.22	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.058
Adjusted Chi Square Value	65.91	95% Jackknife UCL	0.0582
		95% Standard Bootstrap UCL	0.0584
Anderson-Darling Test Statistic	13.38	95% Bootstrap-t UCL	0.0853
Anderson-Darling 5% Critical Value	0.815	95% Hall's Bootstrap UCL	0.132
Kolmogorov-Smirnov Test Statistic	0.393	95% Percentile Bootstrap UCL	0.0601
Kolmogorov-Smirnov 5% Critical Value	0.103	95% BCA Bootstrap UCL	0.0744
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0907
		97.5% Chebyshev(Mean, Sd) UCL	0.113
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.158
95% Approximate Gamma UCL	0.05		
95% Adjusted Gamma UCL	0.0502		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.113

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	79
Raw Statistics		Log-transformed Statistics	
Minimum	414	Minimum of Log Data	6.026
Maximum	15200	Maximum of Log Data	9.629
Mean	5335	Mean of log Data	8.345
Median	4650	SD of log Data	0.757
SD	3345		
Coefficient of Variation	0.627		
Skewness	0.744		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.0927	Lilliefors Test Statistic	0.088
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5946	95% H-UCL	6635

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		7839
95% Adjusted-CLT UCL	5971	97.5% Chebyshev (MVUE) UCL		8817
95% Modified-t UCL	5951	99% Chebyshev (MVUE) UCL		10737
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	2.187	Data appear Normal at 5% Significance Level		
Theta Star	2439			
nu star	363.1			
Approximate Chi Square Value (.05)	320	Nonparametric Statistics		
Adjusted Level of Significance	0.0471	95% CLT UCL		5939
Adjusted Chi Square Value	319.2	95% Jackknife UCL		5946
		95% Standard Bootstrap UCL		5930
Anderson-Darling Test Statistic	0.468	95% Bootstrap-t UCL		5983
Anderson-Darling 5% Critical Value	0.762	95% Hall's Bootstrap UCL		5976
Kolmogorov-Smirnov Test Statistic	0.074	95% Percentile Bootstrap UCL		5953
Kolmogorov-Smirnov 5% Critical Value	0.0992	95% BCA Bootstrap UCL		5953
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		6936
		97.5% Chebyshev(Mean, Sd) UCL		7628
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		8989
95% Approximate Gamma UCL	6055			
95% Adjusted Gamma UCL	6068			
Potential UCL to Use		Use 95% Student's-t UCL		5946

Result or 1/2 SDL (anthracene)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		63
Raw Statistics			Log-transformed Statistics		
Minimum		0.0049	Minimum of Log Data		-5.316
Maximum		2.46	Maximum of Log Data		0.9
Mean		0.0961	Mean of log Data		-3.855
Median		0.0112	SD of log Data		1.589
SD		0.293			
Coefficient of Variation		3.053			
Skewness		6.861			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.378	Lilliefors Test Statistic		0.25
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.15	95% H-UCL		0.123
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.15
95% Adjusted-CLT UCL		0.175	97.5% Chebyshev (MVUE) UCL		0.183
95% Modified-t UCL		0.154	99% Chebyshev (MVUE) UCL		0.249
Gamma Distribution Test			Data Distribution		

k star (bias corrected)	0.422	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.227		
nu star	70.13		
Approximate Chi Square Value (.05)	51.85	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.149
Adjusted Chi Square Value	51.57	95% Jackknife UCL	0.15
		95% Standard Bootstrap UCL	0.15
Anderson-Darling Test Statistic	7.484	95% Bootstrap-t UCL	0.244
Anderson-Darling 5% Critical Value	0.835	95% Hall's Bootstrap UCL	0.369
Kolmogorov-Smirnov Test Statistic	0.229	95% Percentile Bootstrap UCL	0.155
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.19
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.236
		97.5% Chebyshev(Mean, Sd) UCL	0.297
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.416
95% Approximate Gamma UCL	0.13		
95% Adjusted Gamma UCL	0.131		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.297

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	49
Raw Statistics		Log-transformed Statistics	
Minimum	0.095	Minimum of Log Data	-2.354
Maximum	5.14	Maximum of Log Data	1.637
Mean	1.118	Mean of log Data	-0.619
Median	0.23	SD of log Data	1.266
SD	1.228		
Coefficient of Variation	1.099		
Skewness	1.098		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.307	Lilliefors Test Statistic	0.281
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.342	95% H-UCL	1.703
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.102
95% Adjusted-CLT UCL	1.357	97.5% Chebyshev (MVUE) UCL	2.5
95% Modified-t UCL	1.345	99% Chebyshev (MVUE) UCL	3.283
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.79	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.414		
nu star	131.2		
Approximate Chi Square Value (.05)	105.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	1.339

Adjusted Chi Square Value	105.3	95% Jackknife UCL	1.342
		95% Standard Bootstrap UCL	1.334
Anderson-Darling Test Statistic	6.492	95% Bootstrap-t UCL	1.364
Anderson-Darling 5% Critical Value	0.791	95% Hall's Bootstrap UCL	1.357
Kolmogorov-Smirnov Test Statistic	0.302	95% Percentile Bootstrap UCL	1.349
Kolmogorov-Smirnov 5% Critical Value	0.102	95% BCA Bootstrap UCL	1.365
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.705
		97.5% Chebyshev(Mean, Sd) UCL	1.959
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.459
95% Approximate Gamma UCL	1.387		
95% Adjusted Gamma UCL	1.392		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	1.959

Result or 1/2 SDL (aroclor-1254)

General Statistics			
Number of Valid Samples	86	Number of Unique Samples	63
Raw Statistics		Log-transformed Statistics	
Minimum	0.0016	Minimum of Log Data	-6.422
Maximum	7.98	Maximum of Log Data	2.077
Mean	0.137	Mean of log Data	-5.526
Median	0.0018	SD of log Data	1.783
SD	0.875		
Coefficient of Variation	6.368		
Skewness	8.719		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.446	Lilliefors Test Statistic	0.425
Lilliefors Critical Value	0.0955	Lilliefors Critical Value	0.0955
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.294	95% H-UCL	0.0354
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0417
95% Adjusted-CLT UCL	0.387	97.5% Chebyshev (MVUE) UCL	0.0517
95% Modified-t UCL	0.309	99% Chebyshev (MVUE) UCL	0.0714
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.207	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.663		
nu star	35.66		
Approximate Chi Square Value (.05)	22.99	Nonparametric Statistics	
Adjusted Level of Significance	0.0472	95% CLT UCL	0.293
Adjusted Chi Square Value	22.82	95% Jackknife UCL	0.294
		95% Standard Bootstrap UCL	0.294
Anderson-Darling Test Statistic	23.56	95% Bootstrap-t UCL	1.17
Anderson-Darling 5% Critical Value	0.908	95% Hall's Bootstrap UCL	0.859
Kolmogorov-Smirnov Test Statistic	0.451	95% Percentile Bootstrap UCL	0.323

Kolmogorov-Smirnov 5% Critical Value	0.107	95% BCA Bootstrap UCL	0.45
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.548
		97.5% Chebyshev(Mean, Sd) UCL	0.726
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.076
95% Approximate Gamma UCL	0.213		
95% Adjusted Gamma UCL	0.215		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.726
Result or 1/2 SDL (arsenic)			
General Statistics			
Number of Valid Samples	83	Number of Unique Samples	78
Raw Statistics		Log-transformed Statistics	
Minimum	0.085	Minimum of Log Data	-2.465
Maximum	24.3	Maximum of Log Data	3.19
Mean	3.735	Mean of log Data	0.735
Median	2.49	SD of log Data	1.257
SD	4.012		
Coefficient of Variation	1.074		
Skewness	2.522		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.186	Lilliefors Test Statistic	0.128
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.467	95% H-UCL	6.497
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.02
95% Adjusted-CLT UCL	4.589	97.5% Chebyshev (MVUE) UCL	9.533
95% Modified-t UCL	4.488	99% Chebyshev (MVUE) UCL	12.5
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.964	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.873		
nu star	160.1		
Approximate Chi Square Value (.05)	131.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	4.459
Adjusted Chi Square Value	131.4	95% Jackknife UCL	4.467
		95% Standard Bootstrap UCL	4.439
Anderson-Darling Test Statistic	0.324	95% Bootstrap-t UCL	4.598
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	4.764
Kolmogorov-Smirnov Test Statistic	0.061	95% Percentile Bootstrap UCL	4.487
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL	4.531
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.654
		97.5% Chebyshev(Mean, Sd) UCL	6.485
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.116
95% Approximate Gamma UCL	4.535		

95% Adjusted Gamma UCL		4.551		
Potential UCL to Use			Use 95% Approximate Gamma UCL	4.535
Result or 1/2 SDL (barium)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples 79	
Raw Statistics			Log-transformed Statistics	
	Minimum	18.6	Minimum of Log Data	2.923
	Maximum	2180	Maximum of Log Data	7.687
	Mean	345.2	Mean of log Data	5.482
	Median	206	SD of log Data	0.84
	SD	349		
	Coefficient of Variation	1.011		
	Skewness	2.74		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Lilliefors Test Statistic	0.199	Lilliefors Test Statistic	0.096
	Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	408.9	95% H-UCL	415.1
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	496.4
	95% Adjusted-CLT UCL	420.5	97.5% Chebyshev (MVUE) UCL	564
	95% Modified-t UCL	410.9	99% Chebyshev (MVUE) UCL	696.9
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	1.478	Data appear Lognormal at 5% Significance Level	
	Theta Star	233.6		
	nu star	245.3		
	Approximate Chi Square Value (.05)	210	Nonparametric Statistics	
	Adjusted Level of Significance	0.0471	95% CLT UCL	408.2
	Adjusted Chi Square Value	209.5	95% Jackknife UCL	408.9
			95% Standard Bootstrap UCL	409.3
	Anderson-Darling Test Statistic	2.05	95% Bootstrap-t UCL	434.7
	Anderson-Darling 5% Critical Value	0.77	95% Hall's Bootstrap UCL	439
	Kolmogorov-Smirnov Test Statistic	0.146	95% Percentile Bootstrap UCL	412.1
	Kolmogorov-Smirnov 5% Critical Value	0.0998	95% BCA Bootstrap UCL	421.9
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	512.2
			97.5% Chebyshev(Mean, Sd) UCL	584.4
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	726.4
	95% Approximate Gamma UCL	403.2		
	95% Adjusted Gamma UCL	404.3		
Potential UCL to Use			Use 95% H-UCL	415.1

Result or 1/2 SDL (benzo(a)anthracene)					
General Statistics					
Number of Valid Samples		83	Number of Unique Samples		70
Raw Statistics			Log-transformed Statistics		
Minimum		0.0044	Minimum of Log Data		-5.415
Maximum		5.02	Maximum of Log Data		1.613
Mean		0.345	Mean of log Data		-3.502
Median		0.0053	SD of log Data		2.25
SD		0.793			
Coefficient of Variation		2.297			
Skewness		3.493			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.364	Lilliefors Test Statistic		0.285
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.49	95% H-UCL		0.941
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.942
95% Adjusted-CLT UCL		0.524	97.5% Chebyshev (MVUE) UCL		1.202
95% Modified-t UCL		0.495	99% Chebyshev (MVUE) UCL		1.712
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.283	Data do not follow a Discernable Distribution (0.05)		
Theta Star		1.22			
nu star		46.96			
Approximate Chi Square Value (.05)		32.23	Nonparametric Statistics		
Adjusted Level of Significance		0.0471	95% CLT UCL		0.488
Adjusted Chi Square Value		32.02	95% Jackknife UCL		0.49
			95% Standard Bootstrap UCL		0.486
Anderson-Darling Test Statistic		9.314	95% Bootstrap-t UCL		0.547
Anderson-Darling 5% Critical Value		0.872	95% Hall's Bootstrap UCL		0.565
Kolmogorov-Smirnov Test Statistic		0.281	95% Percentile Bootstrap UCL		0.506
Kolmogorov-Smirnov 5% Critical Value		0.107	95% BCA Bootstrap UCL		0.532
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.724
			97.5% Chebyshev(Mean, Sd) UCL		0.888
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1.211
95% Approximate Gamma UCL		0.503			
95% Adjusted Gamma UCL		0.506			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		1.211
Result or 1/2 SDL (benzo(a)pyrene)					
General Statistics					
Number of Valid Samples		83	Number of Unique Samples		80

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0044		Minimum of Log Data	-5.419
	Maximum	4.57		Maximum of Log Data	1.52
	Mean	0.452		Mean of log Data	-2.692
	Median	0.0514		SD of log Data	2.07
	SD	0.92			
	Coefficient of Variation	2.036			
	Skewness	2.73			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.329		Lilliefors Test Statistic	0.106
	Lilliefors Critical Value	0.0973		Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.62		95% H-UCL	1.269
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	1.37
	95% Adjusted-CLT UCL	0.651		97.5% Chebyshev (MVUE) UCL	1.731
	95% Modified-t UCL	0.625		99% Chebyshev (MVUE) UCL	2.44
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.349	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	1.296			
	nu star	57.92			
	Approximate Chi Square Value (.05)	41.43	Nonparametric Statistics		
	Adjusted Level of Significance	0.0471		95% CLT UCL	0.618
	Adjusted Chi Square Value	41.18		95% Jackknife UCL	0.62
				95% Standard Bootstrap UCL	0.621
	Anderson-Darling Test Statistic	4.332		95% Bootstrap-t UCL	0.692
	Anderson-Darling 5% Critical Value	0.853		95% Hall's Bootstrap UCL	0.646
	Kolmogorov-Smirnov Test Statistic	0.213		95% Percentile Bootstrap UCL	0.622
	Kolmogorov-Smirnov 5% Critical Value	0.106		95% BCA Bootstrap UCL	0.651
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.892
Assuming Gamma Distribution				97.5% Chebyshev(Mean, Sd) UCL	1.083
	95% Approximate Gamma UCL	0.632		99% Chebyshev(Mean, Sd) UCL	1.457
	95% Adjusted Gamma UCL	0.636			
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	1.457

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		79
Raw Statistics			Log-transformed Statistics		
Minimum		0.0033	Minimum of Log Data		-5.688
Maximum		5.42	Maximum of Log Data		1.69
Mean		0.582	Mean of log Data		-2.042
Median		0.113	SD of log Data		1.921

SD	1.074		
Coefficient of Variation	1.846		
Skewness	2.709		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.314	Lilliefors Test Statistic	0.0761
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.778	95% H-UCL	1.638
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.857
95% Adjusted-CLT UCL	0.813	97.5% Chebyshev (MVUE) UCL	2.326
95% Modified-t UCL	0.784	99% Chebyshev (MVUE) UCL	3.247
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.425	Data appear Lognormal at 5% Significance Level	
Theta Star	1.369		
nu star	70.59		
Approximate Chi Square Value (.05)	52.25	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.776
Adjusted Chi Square Value	51.97	95% Jackknife UCL	0.778
		95% Standard Bootstrap UCL	0.771
Anderson-Darling Test Statistic	2.74	95% Bootstrap-t UCL	0.839
Anderson-Darling 5% Critical Value	0.835	95% Hall's Bootstrap UCL	0.821
Kolmogorov-Smirnov Test Statistic	0.166	95% Percentile Bootstrap UCL	0.79
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.827
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.096
		97.5% Chebyshev(Mean, Sd) UCL	1.318
		99% Chebyshev(Mean, Sd) UCL	1.755
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.786		
95% Adjusted Gamma UCL	0.79		
Potential UCL to Use		Use 95% H-UCL	1.638

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics

Number of Valid Samples		83	Number of Unique Samples		73
Raw Statistics			Log-transformed Statistics		
Minimum	0.0044		Minimum of Log Data	-5.418	
Maximum	4.24		Maximum of Log Data	1.445	
Mean	0.324		Mean of log Data	-2.987	
Median	0.0493		SD of log Data	2.033	
SD	0.706				
Coefficient of Variation	2.182				
Skewness	3.466				

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.326		Lilliefors Test Statistic		0.179	
Lilliefors Critical Value		0.0973		Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.452		95% H-UCL		0.854	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.934	
95% Adjusted-CLT UCL		0.483		97.5% Chebyshev (MVUE) UCL		1.178	
95% Modified-t UCL		0.457		99% Chebyshev (MVUE) UCL		1.657	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.355		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.911					
nu star		58.96					
Approximate Chi Square Value (.05)		42.3		Nonparametric Statistics			
Adjusted Level of Significance		0.0471		95% CLT UCL		0.451	
Adjusted Chi Square Value		42.05		95% Jackknife UCL		0.452	
				95% Standard Bootstrap UCL		0.449	
Anderson-Darling Test Statistic		4.478		95% Bootstrap-t UCL		0.498	
Anderson-Darling 5% Critical Value		0.852		95% Hall's Bootstrap UCL		0.504	
Kolmogorov-Smirnov Test Statistic		0.172		95% Percentile Bootstrap UCL		0.453	
Kolmogorov-Smirnov 5% Critical Value		0.106		95% BCA Bootstrap UCL		0.499	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.661	
				97.5% Chebyshev(Mean, Sd) UCL		0.807	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		1.095	
95% Approximate Gamma UCL		0.451					
95% Adjusted Gamma UCL		0.454					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		1.095	

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics			
Number of Valid Samples		83	
Number of Unique Samples		59	
Raw Statistics		Log-transformed Statistics	
Minimum		0.0068	
Maximum		4.25	
Mean		0.24	
Median		0.0081	
SD		0.601	
Coefficient of Variation		2.507	
Skewness		4.388	

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic		0.349	
Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.349		95% H-UCL	0.381	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.437	
95% Adjusted-CLT UCL	0.382		97.5% Chebyshev (MVUE) UCL	0.546	
95% Modified-t UCL	0.355		99% Chebyshev (MVUE) UCL	0.76	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	0.336		Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.713				
nu star	55.81				
Approximate Chi Square Value (.05)	39.64		Nonparametric Statistics		
Adjusted Level of Significance	0.0471		95% CLT UCL	0.348	
Adjusted Chi Square Value	39.4		95% Jackknife UCL	0.349	
			95% Standard Bootstrap UCL	0.348	
Anderson-Darling Test Statistic	9.793		95% Bootstrap-t UCL	0.407	
Anderson-Darling 5% Critical Value	0.856		95% Hall's Bootstrap UCL	0.464	
Kolmogorov-Smirnov Test Statistic	0.285		95% Percentile Bootstrap UCL	0.356	
Kolmogorov-Smirnov 5% Critical Value	0.106		95% BCA Bootstrap UCL	0.389	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.527	
			97.5% Chebyshev(Mean, Sd) UCL	0.651	
			99% Chebyshev(Mean, Sd) UCL	0.896	
Assuming Gamma Distribution					
95% Approximate Gamma UCL	0.337				
95% Adjusted Gamma UCL	0.339				
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	0.651	

Result or 1/2 SDL (beryllium)

General Statistics					
Number of Valid Samples	83		Number of Unique Samples	60	
Raw Statistics			Log-transformed Statistics		
Minimum	0.0015		Minimum of Log Data	-6.47	
Maximum	4.6		Maximum of Log Data	1.526	
Mean	0.408		Mean of log Data	-1.368	
Median	0.32		SD of log Data	1.136	
SD	0.525				
Coefficient of Variation	1.287				
Skewness	6.344				

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic	0.22		Lilliefors Test Statistic	0.159	
Lilliefors Critical Value	0.0973		Lilliefors Critical Value	0.0973	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.504		95% H-UCL	0.653	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.803	
95% Adjusted-CLT UCL	0.546		97.5% Chebyshev (MVUE) UCL	0.943	
95% Modified-t UCL	0.511		99% Chebyshev (MVUE) UCL	1.218	

Gamma Distribution Test					Data Distribution					
k star (bias corrected)		1.163	Data Follow Appr. Gamma Distribution at 5% Significance Level							
Theta Star		0.351								
nu star		193.1								
Approximate Chi Square Value (.05)		162	Nonparametric Statistics							
Adjusted Level of Significance		0.0471	95% CLT UCL				0.503			
Adjusted Chi Square Value		161.5	95% Jackknife UCL				0.504			
			95% Standard Bootstrap UCL				0.502			
Anderson-Darling Test Statistic		0.998	95% Bootstrap-t UCL				0.59			
Anderson-Darling 5% Critical Value		0.778	95% Hall's Bootstrap UCL				0.909			
Kolmogorov-Smirnov Test Statistic		0.096	95% Percentile Bootstrap UCL				0.512			
Kolmogorov-Smirnov 5% Critical Value		0.101	95% BCA Bootstrap UCL				0.577			
Data follow Appr. Gamma Distribution at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL				0.659			
			97.5% Chebyshev(Mean, Sd) UCL				0.768			
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL				0.982			
95% Approximate Gamma UCL		0.487								
95% Adjusted Gamma UCL		0.488								
Potential UCL to Use			Use 95% Approximate Gamma UCL				0.487			

Result or 1/2 SDL (biphenyl)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	44
Raw Statistics		Log-transformed Statistics	
Minimum	0.0049	Minimum of Log Data	-5.318
Maximum	0.0807	Maximum of Log Data	-2.517
Mean	0.015	Mean of log Data	-4.739
Median	0.0056	SD of log Data	0.899
SD	0.0197		
Coefficient of Variation	1.313		
Skewness	1.973		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.433	Lilliefors Test Statistic	0.415
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0186	95% H-UCL	0.0162
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0195
95% Adjusted-CLT UCL	0.019	97.5% Chebyshev (MVUE) UCL	0.0223
95% Modified-t UCL	0.0186	99% Chebyshev (MVUE) UCL	0.0279
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.035	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0145		
nu star	171.9		

Approximate Chi Square Value (.05)	142.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0185
Adjusted Chi Square Value	142.1	95% Jackknife UCL	0.0186
		95% Standard Bootstrap UCL	0.0185
Anderson-Darling Test Statistic	16.91	95% Bootstrap-t UCL	0.0193
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	0.0188
Kolmogorov-Smirnov Test Statistic	0.438	95% Percentile Bootstrap UCL	0.0186
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL	0.0191
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0244
		97.5% Chebyshev(Mean, Sd) UCL	0.0285
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0365
95% Approximate Gamma UCL	0.0181		
95% Adjusted Gamma UCL	0.0181		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0244

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	63
Raw Statistics		Log-transformed Statistics	
Minimum	0.475	Minimum of Log Data	-0.744
Maximum	54.4	Maximum of Log Data	3.996
Mean	4.662	Mean of log Data	0.66
Median	1.07	SD of log Data	1.351
SD	7.296		
Coefficient of Variation	1.565		
Skewness	4.319		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.283	Lilliefors Test Statistic	0.261
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.994	95% H-UCL	7.093
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.751
95% Adjusted-CLT UCL	6.384	97.5% Chebyshev (MVUE) UCL	10.49
95% Modified-t UCL	6.057	99% Chebyshev (MVUE) UCL	13.92
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.672	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6.938		
nu star	111.5		
Approximate Chi Square Value (.05)	88.15	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	5.979
Adjusted Chi Square Value	87.78	95% Jackknife UCL	5.994
		95% Standard Bootstrap UCL	6.015
Anderson-Darling Test Statistic	5.465	95% Bootstrap-t UCL	6.686

Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	12.01
Kolmogorov-Smirnov Test Statistic	0.251	95% Percentile Bootstrap UCL	6.051
Kolmogorov-Smirnov 5% Critical Value	0.102	95% BCA Bootstrap UCL	6.577
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.152
		97.5% Chebyshev(Mean, Sd) UCL	9.663
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12.63
95% Approximate Gamma UCL	5.898		
95% Adjusted Gamma UCL	5.922		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	9.663

Result or 1/2 SDL (butyl benzyl phthalate)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	45
Raw Statistics		Log-transformed Statistics	
Minimum	0.0054	Minimum of Log Data	-5.212
Maximum	0.297	Maximum of Log Data	-1.214
Mean	0.0187	Mean of log Data	-4.645
Median	0.0062	SD of log Data	0.914
SD	0.0388		
Coefficient of Variation	2.069		
Skewness	5.405		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.381	Lilliefors Test Statistic	0.407
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0258	95% H-UCL	0.0181
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0219
95% Adjusted-CLT UCL	0.0284	97.5% Chebyshev (MVUE) UCL	0.0251
95% Modified-t UCL	0.0262	99% Chebyshev (MVUE) UCL	0.0314

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.854	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0219		
nu star	141.8		
Approximate Chi Square Value (.05)	115.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0257
Adjusted Chi Square Value	114.9	95% Jackknife UCL	0.0258
		95% Standard Bootstrap UCL	0.0257
Anderson-Darling Test Statistic	16.12	95% Bootstrap-t UCL	0.0343
Anderson-Darling 5% Critical Value	0.788	95% Hall's Bootstrap UCL	0.0581
Kolmogorov-Smirnov Test Statistic	0.427	95% Percentile Bootstrap UCL	0.0265
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL	0.0297
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0373
		97.5% Chebyshev(Mean, Sd) UCL	0.0453

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.0611
95% Approximate Gamma UCL	0.0231			
95% Adjusted Gamma UCL	0.0231			
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL		0.0373

Result or 1/2 SDL (cadmium)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		47
Raw Statistics			Log-transformed Statistics		
Minimum		0.0085	Minimum of Log Data		-4.768
Maximum		9.71	Maximum of Log Data		2.273
Mean		0.464	Mean of log Data		-2.309
Median		0.23	SD of log Data		2.023
SD		1.141			
Coefficient of Variation		2.458			
Skewness		6.868			

Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.345		Lilliefors Test Statistic	0.221
Lilliefors Critical Value	0.0973		Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.672		95% H-UCL	1.636
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	1.796
95% Adjusted-CLT UCL	0.771		97.5% Chebyshev (MVUE) UCL	2.263
95% Modified-t UCL	0.688		99% Chebyshev (MVUE) UCL	3.181
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.416		Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.116			
nu star	69.03			
Approximate Chi Square Value (.05)	50.91		Nonparametric Statistics	
Adjusted Level of Significance	0.0471		95% CLT UCL	0.67
Adjusted Chi Square Value	50.63		95% Jackknife UCL	0.672
			95% Standard Bootstrap UCL	0.665
Anderson-Darling Test Statistic	3.831		95% Bootstrap-t UCL	1.001
Anderson-Darling 5% Critical Value	0.837		95% Hall's Bootstrap UCL	1.548
Kolmogorov-Smirnov Test Statistic	0.195		95% Percentile Bootstrap UCL	0.696
Kolmogorov-Smirnov 5% Critical Value	0.105		95% BCA Bootstrap UCL	0.822
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	1.01
			97.5% Chebyshev(Mean, Sd) UCL	1.246
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	1.71
95% Approximate Gamma UCL	0.629			
95% Adjusted Gamma UCL	0.633			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	1.71

Result or 1/2 SDL (carbazole)			
General Statistics			
Number of Valid Samples		83	
			Number of Unique Samples
			68
Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.444
Maximum	1.54	Maximum of Log Data	0.432
Mean	0.0612	Mean of log Data	-4.243
Median	0.0051	SD of log Data	1.457
SD	0.192		
Coefficient of Variation	3.132		
Skewness	6.428		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.383	Lilliefors Test Statistic	0.302
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0962	95% H-UCL	0.0641
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0787
95% Adjusted-CLT UCL	0.112	97.5% Chebyshev (MVUE) UCL	0.0953
95% Modified-t UCL	0.0987	99% Chebyshev (MVUE) UCL	0.128
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.438	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.14		
nu star	72.73		
Approximate Chi Square Value (.05)	54.09	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0958
Adjusted Chi Square Value	53.81	95% Jackknife UCL	0.0962
		95% Standard Bootstrap UCL	0.0954
Anderson-Darling Test Statistic	9.829	95% Bootstrap-t UCL	0.171
Anderson-Darling 5% Critical Value	0.831	95% Hall's Bootstrap UCL	0.246
Kolmogorov-Smirnov Test Statistic	0.284	95% Percentile Bootstrap UCL	0.0994
Kolmogorov-Smirnov 5% Critical Value	0.104	95% BCA Bootstrap UCL	0.123
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.153
		97.5% Chebyshev(Mean, Sd) UCL	0.193
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.27
95% Approximate Gamma UCL	0.0823		
95% Adjusted Gamma UCL	0.0827		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.193

Result or 1/2 SDL (chromium)

General Statistics

Number of Valid Samples		83	Number of Unique Samples		75
Raw Statistics			Log-transformed Statistics		
Minimum	3.37	Minimum of Log Data	1.215		
Maximum	136	Maximum of Log Data	4.913		
Mean	16.08	Mean of log Data	2.58		
Median	12.6	SD of log Data	0.568		
SD	15.7				
Coefficient of Variation	0.977				
Skewness	5.833				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.227	Lilliefors Test Statistic	0.0598		
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973		
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
95% Student's-t UCL	18.94	95% H-UCL	17.45		
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.97		
95% Adjusted-CLT UCL	20.09	97.5% Chebyshev (MVUE) UCL	21.91		
95% Modified-t UCL	19.13	99% Chebyshev (MVUE) UCL	25.74		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	2.597	Data appear Lognormal at 5% Significance Level			
Theta Star	6.19				
nu star	431.1				
Approximate Chi Square Value (.05)	384	Nonparametric Statistics			
Adjusted Level of Significance	0.0471	95% CLT UCL	18.91		
Adjusted Chi Square Value	383.2	95% Jackknife UCL	18.94		
		95% Standard Bootstrap UCL	18.82		
Anderson-Darling Test Statistic	2.059	95% Bootstrap-t UCL	21.55		
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	31.63		
Kolmogorov-Smirnov Test Statistic	0.113	95% Percentile Bootstrap UCL	19.12		
Kolmogorov-Smirnov 5% Critical Value	0.099	95% BCA Bootstrap UCL	20.49		
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23.59		
		97.5% Chebyshev(Mean, Sd) UCL	26.84		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	33.22		
95% Approximate Gamma UCL	18.05				
95% Adjusted Gamma UCL	18.09				
Potential UCL to Use		Use 95% H-UCL	17.45		

Result or 1/2 SDL (chrysene)

General Statistics							
Number of Valid Samples			83	Number of Unique Samples			82
Raw Statistics				Log-transformed Statistics			
Minimum		0.0042		Minimum of Log Data		-5.47	
Maximum		4.87		Maximum of Log Data		1.583	

Mean	0.409	Mean of log Data	-2.736
Median	0.0493	SD of log Data	2.052
SD	0.836		
Coefficient of Variation	2.044		
Skewness	3.079		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.322	Lilliefors Test Statistic	0.0982
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.562	95% H-UCL	1.156
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.256
95% Adjusted-CLT UCL	0.593	97.5% Chebyshev (MVUE) UCL	1.586
95% Modified-t UCL	0.567	99% Chebyshev (MVUE) UCL	2.233
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.358	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.142		
nu star	59.42		
Approximate Chi Square Value (.05)	42.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.56
Adjusted Chi Square Value	42.45	95% Jackknife UCL	0.562
		95% Standard Bootstrap UCL	0.557
Anderson-Darling Test Statistic	3.941	95% Bootstrap-t UCL	0.617
Anderson-Darling 5% Critical Value	0.851	95% Hall's Bootstrap UCL	0.604
Kolmogorov-Smirnov Test Statistic	0.203	95% Percentile Bootstrap UCL	0.57
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	0.607
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.809
		97.5% Chebyshev(Mean, Sd) UCL	0.982
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.322
95% Approximate Gamma UCL	0.569		
95% Adjusted Gamma UCL	0.572		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.322

Result or 1/2 SDL (cobalt)

General Statistics

Number of Valid Samples		83	Number of Unique Samples		79
Raw Statistics			Log-transformed Statistics		
Minimum	0.0125		Minimum of Log Data	-4.382	
Maximum	16		Maximum of Log Data	2.773	
Mean	3.705		Mean of log Data	1.069	
Median	3.49		SD of log Data	0.946	
SD	2.249				
Coefficient of Variation	0.607				
Skewness	2.18				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.107	Lilliefors Test Statistic	0.182
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.116	95% H-UCL	5.716
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.921
95% Adjusted-CLT UCL	4.175	97.5% Chebyshev (MVUE) UCL	7.962
95% Modified-t UCL	4.126	99% Chebyshev (MVUE) UCL	10
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.153	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.721		
nu star	357.5		
Approximate Chi Square Value (.05)	314.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	4.111
Adjusted Chi Square Value	313.9	95% Jackknife UCL	4.116
		95% Standard Bootstrap UCL	4.118
Anderson-Darling Test Statistic	1.75	95% Bootstrap-t UCL	4.185
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	4.256
Kolmogorov-Smirnov Test Statistic	0.112	95% Percentile Bootstrap UCL	4.137
Kolmogorov-Smirnov 5% Critical Value	0.0993	95% BCA Bootstrap UCL	4.198
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.781
		97.5% Chebyshev(Mean, Sd) UCL	5.247
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.161
95% Approximate Gamma UCL	4.21		
95% Adjusted Gamma UCL	4.219		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	4.781

Result or 1/2 SDL (copper)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	78
Raw Statistics		Log-transformed Statistics	
Minimum	1.55	Minimum of Log Data	0.438
Maximum	216	Maximum of Log Data	5.375
Mean	27.98	Mean of log Data	2.929
Median	16.4	SD of log Data	0.844
SD	35.35		
Coefficient of Variation	1.263		
Skewness	3.794		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.26	Lilliefors Test Statistic	0.0827
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973

Data not Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		34.43		95% H-UCL		32.45	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		38.82	
95% Adjusted-CLT UCL		36.09		97.5% Chebyshev (MVUE) UCL		44.12	
95% Modified-t UCL		34.7		99% Chebyshev (MVUE) UCL		54.55	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.342		Data appear Lognormal at 5% Significance Level			
Theta Star		20.85					
nu star		222.7					
Approximate Chi Square Value (.05)		189.2		Nonparametric Statistics			
Adjusted Level of Significance		0.0471		95% CLT UCL		34.36	
Adjusted Chi Square Value		188.6		95% Jackknife UCL		34.43	
				95% Standard Bootstrap UCL		34.22	
Anderson-Darling Test Statistic		3.103		95% Bootstrap-t UCL		37.53	
Anderson-Darling 5% Critical Value		0.773		95% Hall's Bootstrap UCL		39.93	
Kolmogorov-Smirnov Test Statistic		0.147		95% Percentile Bootstrap UCL		34.91	
Kolmogorov-Smirnov 5% Critical Value		0.1		95% BCA Bootstrap UCL		36.81	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		44.89	
				97.5% Chebyshev(Mean, Sd) UCL		52.21	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		66.58	
95% Approximate Gamma UCL		32.94					
95% Adjusted Gamma UCL		33.04					
Potential UCL to Use				Use 95% H-UCL		32.45	

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	78
Raw Statistics		Log-transformed Statistics	
Minimum	0.0042	Minimum of Log Data	-5.466
Maximum	1.64	Maximum of Log Data	0.495
Mean	0.155	Mean of log Data	-3.578
Median	0.0061	SD of log Data	1.966
SD	0.303		
Coefficient of Variation	1.952		
Skewness	3.008		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.31	Lilliefors Test Statistic	0.299
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.21	95% H-UCL	0.396
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.443

95% Adjusted-CLT UCL	0.222	97.5% Chebyshev (MVUE) UCL	0.556
95% Modified-t UCL	0.212	99% Chebyshev (MVUE) UCL	0.779
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.38	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.408		
nu star	63.11		
Approximate Chi Square Value (.05)	45.83	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.21
Adjusted Chi Square Value	45.57	95% Jackknife UCL	0.21
		95% Standard Bootstrap UCL	0.21
Anderson-Darling Test Statistic	6.569	95% Bootstrap-t UCL	0.229
Anderson-Darling 5% Critical Value	0.846	95% Hall's Bootstrap UCL	0.225
Kolmogorov-Smirnov Test Statistic	0.285	95% Percentile Bootstrap UCL	0.214
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.222
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.3
		97.5% Chebyshev(Mean, Sd) UCL	0.363
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.486
95% Approximate Gamma UCL	0.214		
95% Adjusted Gamma UCL	0.215		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.363

Result or 1/2 SDL (dibenzofuran)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	48
Raw Statistics		Log-transformed Statistics	
Minimum	0.0062	Minimum of Log Data	-5.083
Maximum	0.821	Maximum of Log Data	-0.197
Mean	0.0378	Mean of log Data	-4.288
Median	0.0071	SD of log Data	1.133
SD	0.107		
Coefficient of Variation	2.831		
Skewness	6.111		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.384	Lilliefors Test Statistic	0.376
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0574	95% H-UCL	0.0351
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0431
95% Adjusted-CLT UCL	0.0656	97.5% Chebyshev (MVUE) UCL	0.0506
95% Modified-t UCL	0.0587	99% Chebyshev (MVUE) UCL	0.0653
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.594	Data do not follow a Discernable Distribution (0.05)	

Theta Star	0.0636		
nu star	98.68		
Approximate Chi Square Value (.05)	76.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0572
Adjusted Chi Square Value	76.42	95% Jackknife UCL	0.0574
		95% Standard Bootstrap UCL	0.0568
Anderson-Darling Test Statistic	13.02	95% Bootstrap-t UCL	0.104
Anderson-Darling 5% Critical Value	0.808	95% Hall's Bootstrap UCL	0.15
Kolmogorov-Smirnov Test Statistic	0.378	95% Percentile Bootstrap UCL	0.0589
Kolmogorov-Smirnov 5% Critical Value	0.103	95% BCA Bootstrap UCL	0.0688
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0891
		97.5% Chebyshev(Mean, Sd) UCL	0.111
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.155
95% Approximate Gamma UCL	0.0486		
95% Adjusted Gamma UCL	0.0488		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.111

Result or 1/2 SDL (dieltrin)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	57
Raw Statistics		Log-transformed Statistics	
Minimum	7.0000E-5	Minimum of Log Data	-9.567
Maximum	0.0205	Maximum of Log Data	-3.887
Mean	9.9705E-4	Mean of log Data	-8.475
Median	8.3000E-5	SD of log Data	1.456
SD	0.0030		
Coefficient of Variation	3.053		
Skewness	5.171		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.38	Lilliefors Test Statistic	0.314
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0015	95% H-UCL	9.2982E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0011
95% Adjusted-CLT UCL	0.0017	97.5% Chebyshev (MVUE) UCL	0.0013
95% Modified-t UCL	0.0015	99% Chebyshev (MVUE) UCL	0.0018
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.411	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0024		
nu star	68.17		
Approximate Chi Square Value (.05)	50.17	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0015
Adjusted Chi Square Value	49.9	95% Jackknife UCL	0.0015

[illegible]

Result or 1/2 SDL (di-n-butyl phthalate)

General Statistics

Number of Valid Samples	83	Number of Unique Samples	55
-------------------------	----	--------------------------	----

Raw Statistics

Minimum	0.0126
Maximum	0.753
Mean	0.048
Median	0.0143
SD	0.102
of Variation	2.121
Skewness	4.995

Log-transformed Statistics

Minimum of Log Data	-4.378
Maximum of Log Data	-0.284
Mean of log Data	-3.781
SD of log Data	0.966

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.375
Lilliefors Critical Value	0.0973

Lognormal Distribution Test

Lilliefors Test Statistic	0.401
Lilliefors Critical Value	0.0973

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 0.0666

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL 0.0729

95% Modified-t UCL 0.0676

Assuming Lognormal Distribution

95% H-UCL	0.0459
-----------	--------

95% Chebyshev (MVUE) UCL	0.0558
--------------------------	--------

97.5% Chebyshev (MVUE) UCL 0.0643

99% Chebyshev (MVUE) UCL	0.081
--------------------------	-------

Gamma Distribution Test

k star (bias corrected) 0.777

Theta Star 0.0618

nu star 129

Approximate Chi Square Value (.05) 103.7

Adjusted Level of Significance 0.0471Adjusted Chi Square Value 103.4

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL 0.0664

95% Jackknife UCL 0.066695% Standard Bootstrap UCL 0.066495% Bootstrap-t UCL 0.083795% Hall's Bootstrap UCL 0.12995% Percentile Bootstrap UCL 0.069195% BCA Bootstrap UCL 0.074

Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0967
				97.5% Chebyshev(Mean, Sd) UCL		0.118
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.159
95% Approximate Gamma UCL		0.0597				
95% Adjusted Gamma UCL		0.0599				
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.0967
Result or 1/2 SDL (endosulfan sulfate)						
General Statistics						
Number of Valid Samples		83	Number of Unique Samples		63	
Raw Statistics			Log-transformed Statistics			
Minimum		1.3250E-4	Minimum of Log Data		-8.929	
Maximum		0.0713	Maximum of Log Data		-2.641	
Mean		0.002	Mean of log Data		-8.01	
Median		1.5450E-4	SD of log Data		1.391	
SD		0.0084				
Coefficient of Variation		4.216				
Skewness		7.243				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Lilliefors Test Statistic		0.424	Lilliefors Test Statistic		0.34	
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		0.0035	95% H-UCL		0.0013	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0016	
95% Adjusted-CLT UCL		0.0043	97.5% Chebyshev (MVUE) UCL		0.0019	
95% Modified-t UCL		0.0036	99% Chebyshev (MVUE) UCL		0.0025	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.365	Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0054				
nu star		60.65				
Approximate Chi Square Value (.05)		43.74	Nonparametric Statistics			
Adjusted Level of Significance		0.0471	95% CLT UCL		0.0035	
Adjusted Chi Square Value		43.48	95% Jackknife UCL		0.0035	
			95% Standard Bootstrap UCL		0.0035	
Anderson-Darling Test Statistic		15.84	95% Bootstrap-t UCL		0.0080	
Anderson-Darling 5% Critical Value		0.849	95% Hall's Bootstrap UCL		0.0090	
Kolmogorov-Smirnov Test Statistic		0.343	95% Percentile Bootstrap UCL		0.0036	
Kolmogorov-Smirnov 5% Critical Value		0.106	95% BCA Bootstrap UCL		0.0047	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0060	
			97.5% Chebyshev(Mean, Sd) UCL		0.0077	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0112	
95% Approximate Gamma UCL		0.0027				
95% Adjusted Gamma UCL		0.0027				

Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL		0.0077	
Result or 1/2 SDL (endrin aldehyde)							
General Statistics							
Number of Valid Samples		83		Number of Unique Samples		69	
Raw Statistics				Log-transformed Statistics			
Minimum		1.6800E-4		Minimum of Log Data		-8.692	
Maximum		0.0738		Maximum of Log Data		-2.606	
Mean		0.0023		Mean of log Data		-7.729	
Median		1.9500E-4		SD of log Data		1.421	
SD		0.0089					
Coefficient of Variation		3.782					
Skewness		6.88					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.403		Lilliefors Test Statistic		0.36	
Lilliefors Critical Value		0.0973		Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0039		95% H-UCL		0.0018	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0022	
95% Adjusted-CLT UCL		0.0047		97.5% Chebyshev (MVUE) UCL		0.0027	
95% Modified-t UCL		0.0041		99% Chebyshev (MVUE) UCL		0.0036	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.387		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0061					
nu star		64.22					
Approximate Chi Square Value (.05)		46.78		Nonparametric Statistics			
Adjusted Level of Significance		0.0471		95% CLT UCL		0.0039	
Adjusted Chi Square Value		46.52		95% Jackknife UCL		0.0039	
				95% Standard Bootstrap UCL		0.0039	
Anderson-Darling Test Statistic		14.52		95% Bootstrap-t UCL		0.0074	
Anderson-Darling 5% Critical Value		0.844		95% Hall's Bootstrap UCL		0.0097	
Kolmogorov-Smirnov Test Statistic		0.363		95% Percentile Bootstrap UCL		0.0041	
Kolmogorov-Smirnov 5% Critical Value		0.105		95% BCA Bootstrap UCL		0.0050	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0066	
				97.5% Chebyshev(Mean, Sd) UCL		0.0084	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0121	
95% Approximate Gamma UCL		0.0032					
95% Adjusted Gamma UCL		0.0032					
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL		0.0084	
Result or 1/2 SDL (endrin ketone)							

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	67
Raw Statistics		Log-transformed Statistics	
Minimum	2.1300E-4	Minimum of Log Data	-8.454
Maximum	0.02	Maximum of Log Data	-3.912
Mean	0.0016	Mean of log Data	-7.554
Median	2.4500E-4	SD of log Data	1.31
SD	0.0034		
Coefficient of Variation	2.05		
Skewness	3.169		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.359	Lilliefors Test Statistic	0.362
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0023	95% H-UCL	0.0017
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0022
95% Adjusted-CLT UCL	0.0024	97.5% Chebyshev (MVUE) UCL	0.0026
95% Modified-t UCL	0.0023	99% Chebyshev (MVUE) UCL	0.0034
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.528	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0031		
nu star	87.68		
Approximate Chi Square Value (.05)	67.09	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0023
Adjusted Chi Square Value	66.77	95% Jackknife UCL	0.0023
		95% Standard Bootstrap UCL	0.0023
Anderson-Darling Test Statistic	13.72	95% Bootstrap-t UCL	0.0025
Anderson-Darling 5% Critical Value	0.815	95% Hall's Bootstrap UCL	0.0024
Kolmogorov-Smirnov Test Statistic	0.373	95% Percentile Bootstrap UCL	0.0023
Kolmogorov-Smirnov 5% Critical Value	0.103	95% BCA Bootstrap UCL	0.0025
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0033
		97.5% Chebyshev(Mean, Sd) UCL	0.0040
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0054
95% Approximate Gamma UCL	0.0021		
95% Adjusted Gamma UCL	0.0022		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0040

Result or 1/2 SDL (fluoranthene)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	78
Raw Statistics		Log-transformed Statistics	

Minimum	0.0053	Minimum of Log Data	-5.231
Maximum	14.2	Maximum of Log Data	2.653
Mean	0.799	Mean of log Data	-2.284
Median	0.0748	SD of log Data	2.188
SD	1.943		
Coefficient of Variation	2.431		
Skewness	4.772		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.341	Lilliefors Test Statistic	0.089
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.154	95% H-UCL	2.656
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.735
95% Adjusted-CLT UCL	1.269	97.5% Chebyshev (MVUE) UCL	3.477
95% Modified-t UCL	1.173	99% Chebyshev (MVUE) UCL	4.936
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.326	Data appear Lognormal at 5% Significance Level	
Theta Star	2.453		
nu star	54.08		
Approximate Chi Square Value (.05)	38.19	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	1.15
Adjusted Chi Square Value	37.95	95% Jackknife UCL	1.154
		95% Standard Bootstrap UCL	1.149
Anderson-Darling Test Statistic	3.83	95% Bootstrap-t UCL	1.4
Anderson-Darling 5% Critical Value	0.859	95% Hall's Bootstrap UCL	2.632
Kolmogorov-Smirnov Test Statistic	0.183	95% Percentile Bootstrap UCL	1.187
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	1.304
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.729
		97.5% Chebyshev(Mean, Sd) UCL	2.131
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.921
95% Approximate Gamma UCL	1.132		
95% Adjusted Gamma UCL	1.139		
Potential UCL to Use		Use 95% H-UCL	2.656

Result or 1/2 SDL (fluorene)

General Statistics

Number of Valid Samples		83	Number of Unique Samples		76
Raw Statistics			Log-transformed Statistics		
Minimum	0.0043		Minimum of Log Data	-5.449	
Maximum	1.11		Maximum of Log Data	0.104	
Mean	0.0515		Mean of log Data	-4.291	
Median	0.0050		SD of log Data	1.395	
SD	0.152				

Coefficient of Variation		2.942		
Skewness		5.801		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Lilliefors Test Statistic	0.378	Lilliefors Test Statistic	0.312	
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	0.0792	95% H-UCL	0.0544	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.067	
95% Adjusted-CLT UCL	0.0902	97.5% Chebyshev (MVUE) UCL	0.0807	
95% Modified-t UCL	0.0809	99% Chebyshev (MVUE) UCL	0.108	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.473	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.109			
nu star	78.47			
Approximate Chi Square Value (.05)	59.06	Nonparametric Statistics		
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0789	
Adjusted Chi Square Value	58.76	95% Jackknife UCL	0.0792	
		95% Standard Bootstrap UCL	0.0786	
Anderson-Darling Test Statistic	9.551	95% Bootstrap-t UCL	0.138	
Anderson-Darling 5% Critical Value	0.823	95% Hall's Bootstrap UCL	0.208	
Kolmogorov-Smirnov Test Statistic	0.297	95% Percentile Bootstrap UCL	0.0817	
Kolmogorov-Smirnov 5% Critical Value	0.104	95% BCA Bootstrap UCL	0.0957	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.124	
		97.5% Chebyshev(Mean, Sd) UCL	0.155	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.217	
95% Approximate Gamma UCL	0.0684			
95% Adjusted Gamma UCL	0.0688			
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.155	
Result or 1/2 SDL (gamma-chlordane)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples	
			57	
Raw Statistics		Log-transformed Statistics		
Minimum	1.1000E-4	Minimum of Log Data	-9.115	
Maximum	0.0156	Maximum of Log Data	-4.16	
Mean	8.2679E-4	Mean of log Data	-8.449	
Median	1.2500E-4	SD of log Data	1.205	
SD	0.0024			
Coefficient of Variation	2.992			
Skewness	4.837			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)

General Statistics			
Number of Valid Samples		83	Number of Unique Samples 78
Raw Statistics		Log-transformed Statistics	
Minimum		0.0071	Minimum of Log Data -4.948
Maximum		6.49	Maximum of Log Data 1.87
Mean		0.47	Mean of log Data -2.172
Median		0.11	SD of log Data 1.821
SD		0.94	
Coefficient of Variation		2	
Skewness		3.998	

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic		0.319	Lilliefors Test Statistic 0.156
Lilliefors Critical Value		0.0973	Lilliefors Critical Value 0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

95% Student's-t UCL	0.642	95% H-UCL	1.122
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.305
95% Adjusted-CLT UCL	0.688	97.5% Chebyshev (MVUE) UCL	1.624
95% Modified-t UCL	0.649	99% Chebyshev (MVUE) UCL	2.251
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.446	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.053		
nu star	74.09		
Approximate Chi Square Value (.05)	55.27	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.64
Adjusted Chi Square Value	54.98	95% Jackknife UCL	0.642
		95% Standard Bootstrap UCL	0.638
Anderson-Darling Test Statistic	3.485	95% Bootstrap-t UCL	0.722
Anderson-Darling 5% Critical Value	0.829	95% Hall's Bootstrap UCL	0.812
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	0.656
Kolmogorov-Smirnov 5% Critical Value	0.104	95% BCA Bootstrap UCL	0.69
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.92
		97.5% Chebyshev(Mean, Sd) UCL	1.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.497
95% Approximate Gamma UCL	0.63		
95% Adjusted Gamma UCL	0.634		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	1.115

Result or 1/2 SDL (iron)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	73
Raw Statistics		Log-transformed Statistics	
Minimum	3450	Minimum of Log Data	8.146
Maximum	77100	Maximum of Log Data	11.25
Mean	16285	Mean of log Data	9.548
Median	13400	SD of log Data	0.52
SD	11193		
Coefficient of Variation	0.687		
Skewness	3.11		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.205	Lilliefors Test Statistic	0.0958
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18329	95% H-UCL	17845
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20231
95% Adjusted-CLT UCL	18754	97.5% Chebyshev (MVUE) UCL	22055
95% Modified-t UCL	18399	99% Chebyshev (MVUE) UCL	25638

Gamma Distribution Test				Data Distribution			
k star (bias corrected)	3.376	Data appear Lognormal at 5% Significance Level					
Theta Star	4824						
nu star	560.3						
Approximate Chi Square Value (.05)	506.4	Nonparametric Statistics					
Adjusted Level of Significance	0.0471	95% CLT UCL				18306	
Adjusted Chi Square Value	505.5	95% Jackknife UCL				18329	
		95% Standard Bootstrap UCL				18299	
Anderson-Darling Test Statistic	2.12	95% Bootstrap-t UCL				18935	
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL				19503	
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL				18453	
Kolmogorov-Smirnov 5% Critical Value	0.0987	95% BCA Bootstrap UCL				18869	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL				21640	
		97.5% Chebyshev(Mean, Sd) UCL				23957	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL				28509	
95% Approximate Gamma UCL	18019						
95% Adjusted Gamma UCL	18051						
Potential UCL to Use		Use 95% H-UCL				17845	
Result or 1/2 SDL (lead)							
General Statistics							
Number of Valid Samples	83	Number of Unique Samples				80	
Raw Statistics			Log-transformed Statistics				
Minimum	2.82	Minimum of Log Data			1.037		
Maximum	643	Maximum of Log Data			6.466		
Mean	69.61	Mean of log Data			3.584		
Median	34.4	SD of log Data			1.077		
SD	112.8						
Coefficient of Variation	1.62						
Skewness	3.653						
Relevant UCL Statistics							
Normal Distribution Test			Lognormal Distribution Test				
Lilliefors Test Statistic	0.277	Lilliefors Test Statistic			0.0781		
Lilliefors Critical Value	0.0973	Lilliefors Critical Value			0.0973		
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level				
Assuming Normal Distribution			Assuming Lognormal Distribution				
95% Student's-t UCL	90.2	95% H-UCL			84.5		
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL			103.5	
95% Adjusted-CLT UCL	95.27	97.5% Chebyshev (MVUE) UCL			120.8		
95% Modified-t UCL	91.03	99% Chebyshev (MVUE) UCL			154.8		
Gamma Distribution Test			Data Distribution				
k star (bias corrected)	0.864	Data appear Lognormal at 5% Significance Level					
Theta Star	80.56						
nu star	143.4						
Approximate Chi Square Value (.05)	116.8	Nonparametric Statistics					

Adjusted Level of Significance	0.0471	95% CLT UCL	89.97
Adjusted Chi Square Value	116.3	95% Jackknife UCL	90.2
		95% Standard Bootstrap UCL	89.75
Anderson-Darling Test Statistic	3.258	95% Bootstrap-t UCL	100.5
Anderson-Darling 5% Critical Value	0.787	95% Hall's Bootstrap UCL	94.9
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	91.31
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL	95.36
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	123.6
		97.5% Chebyshev(Mean, Sd) UCL	146.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	192.8
95% Approximate Gamma UCL	85.51		
95% Adjusted Gamma UCL	85.82		
Potential UCL to Use		Use 95% H-UCL	84.5

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	80
Raw Statistics		Log-transformed Statistics	
Minimum	0.65	Minimum of Log Data	-0.431
Maximum	28	Maximum of Log Data	3.332
Mean	7.856	Mean of log Data	1.76
Median	6.44	SD of log Data	0.847
SD	5.715		
Coefficient of Variation	0.728		
Skewness	1.032		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.148	Lilliefors Test Statistic	0.0724
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.899	95% H-UCL	10.12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.11
95% Adjusted-CLT UCL	8.963	97.5% Chebyshev (MVUE) UCL	13.77
95% Modified-t UCL	8.911	99% Chebyshev (MVUE) UCL	17.03
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.749	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.492		
nu star	290.3		
Approximate Chi Square Value (.05)	251.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	8.887
Adjusted Chi Square Value	251.2	95% Jackknife UCL	8.899
		95% Standard Bootstrap UCL	8.869
Anderson-Darling Test Statistic	0.362	95% Bootstrap-t UCL	9.045
Anderson-Darling 5% Critical Value	0.766	95% Hall's Bootstrap UCL	9.048

Kolmogorov-Smirnov Test Statistic	0.0621	95% Percentile Bootstrap UCL	8.862
Kolmogorov-Smirnov 5% Critical Value	0.0996	95% BCA Bootstrap UCL	9.001
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10.59
		97.5% Chebyshev(Mean, Sd) UCL	11.77
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14.1
95% Approximate Gamma UCL	9.055		
95% Adjusted Gamma UCL	9.078		
Potential UCL to Use		Use 95% Approximate Gamma UCL	9.055

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	71
Raw Statistics		Log-transformed Statistics	
Minimum	59.3	Minimum of Log Data	4.083
Maximum	892	Maximum of Log Data	6.793
Mean	257.4	Mean of log Data	5.455
Median	224	SD of log Data	0.426
SD	129.3		
Coefficient of Variation	0.502		
Skewness	2.305		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.196	Lilliefors Test Statistic	0.102
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	281.1	95% H-UCL	278.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	310.2
95% Adjusted-CLT UCL	284.6	97.5% Chebyshev (MVUE) UCL	333.7
95% Modified-t UCL	281.7	99% Chebyshev (MVUE) UCL	379.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.208	Data do not follow a Discernable Distribution (0.05)	
Theta Star	49.43		
nu star	864.6		
Approximate Chi Square Value (.05)	797.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	280.8
Adjusted Chi Square Value	796.2	95% Jackknife UCL	281.1
		95% Standard Bootstrap UCL	280.6
Anderson-Darling Test Statistic	1.874	95% Bootstrap-t UCL	288.2
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	288.5
Kolmogorov-Smirnov Test Statistic	0.132	95% Percentile Bootstrap UCL	282.3
Kolmogorov-Smirnov 5% Critical Value	0.0983	95% BCA Bootstrap UCL	286.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	319.3
		97.5% Chebyshev(Mean, Sd) UCL	346.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	398.7

95% Approximate Gamma UCL	279.1		
95% Adjusted Gamma UCL	279.5		
Potential UCL to Use		Use 95% Student's-t UCL	281.1
		or 95% Modified-t UCL	281.7

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	55
Raw Statistics		Log-transformed Statistics	
Minimum	0.001	Minimum of Log Data	-6.908
Maximum	0.66	Maximum of Log Data	-0.416
Mean	0.0227	Mean of log Data	-4.95
Median	0.0065	SD of log Data	1.339
SD	0.0752		
Coefficient of Variation	3.315		
Skewness	7.742		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.387	Lilliefors Test Statistic	0.0883
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0364	95% H-UCL	0.0254
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0314
95% Adjusted-CLT UCL	0.0437	97.5% Chebyshev (MVUE) UCL	0.0376
95% Modified-t UCL	0.0376	99% Chebyshev (MVUE) UCL	0.0498
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.528	Data appear Lognormal at 5% Significance Level	
Theta Star	0.0429		
nu star	87.68		
Approximate Chi Square Value (.05)	67.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0362
Adjusted Chi Square Value	66.78	95% Jackknife UCL	0.0364
Anderson-Darling Test Statistic	5.016	95% Standard Bootstrap UCL	0.0365
Anderson-Darling 5% Critical Value	0.815	95% Bootstrap-t UCL	0.0699
Kolmogorov-Smirnov Test Statistic	0.208	95% Hall's Bootstrap UCL	0.0863
Kolmogorov-Smirnov 5% Critical Value	0.103	95% Percentile Bootstrap UCL	0.0377
Data not Gamma Distributed at 5% Significance Level		95% BCA Bootstrap UCL	0.0485
		95% Chebyshev(Mean, Sd) UCL	0.0586
		97.5% Chebyshev(Mean, Sd) UCL	0.0742
		99% Chebyshev(Mean, Sd) UCL	0.105
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0296		
95% Adjusted Gamma UCL	0.0298		
Potential UCL to Use		Use 95% H-UCL	0.0254

Result or 1/2 SDL (molybdenum)			
General Statistics			
Number of Valid Samples	83	Number of Unique Samples	67
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	8.42	Maximum of Log Data	2.131
Mean	1.306	Mean of log Data	-0.575
Median	0.91	SD of log Data	1.522
SD	1.588		
Coefficient of Variation	1.216		
Skewness	2.126		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.23	Lilliefors Test Statistic	0.136
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.596	95% H-UCL	2.859
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.492
95% Adjusted-CLT UCL	1.637	97.5% Chebyshev (MVUE) UCL	4.25
95% Modified-t UCL	1.603	99% Chebyshev (MVUE) UCL	5.739
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.698	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.872		
nu star	115.8		
Approximate Chi Square Value (.05)	91.98	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	1.593
Adjusted Chi Square Value	91.61	95% Jackknife UCL	1.596
		95% Standard Bootstrap UCL	1.589
Anderson-Darling Test Statistic	0.65	95% Bootstrap-t UCL	1.662
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	1.639
Kolmogorov-Smirnov Test Statistic	0.0752	95% Percentile Bootstrap UCL	1.596
Kolmogorov-Smirnov 5% Critical Value	0.102	95% BCA Bootstrap UCL	1.645
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.066
		97.5% Chebyshev(Mean, Sd) UCL	2.395
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.041
95% Approximate Gamma UCL	1.645		
95% Adjusted Gamma UCL	1.652		
Potential UCL to Use		Use 95% Approximate Gamma UCL	1.645
Result or 1/2 SDL (nickel)			
General Statistics			

Number of Valid Samples		83	Number of Unique Samples		67
Raw Statistics			Log-transformed Statistics		
	Minimum	2.84		Minimum of Log Data	1.044
	Maximum	36.7		Maximum of Log Data	3.603
	Mean	11.64		Mean of log Data	2.373
	Median	11.2		SD of log Data	0.411
	SD	4.938			
	Coefficient of Variation	0.424			
	Skewness	1.825			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.13		Lilliefors Test Statistic	0.0874
	Lilliefors Critical Value	0.0973		Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	12.54		95% H-UCL	12.67
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	14.05
	95% Adjusted-CLT UCL	12.65		97.5% Chebyshev (MVUE) UCL	15.08
	95% Modified-t UCL	12.56		99% Chebyshev (MVUE) UCL	17.1
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	6.095	Data appear Gamma Distributed at 5% Significance Level		
	Theta Star	1.91			
	nu star	1012			
	Approximate Chi Square Value (.05)	938.9	Nonparametric Statistics		
	Adjusted Level of Significance	0.0471		95% CLT UCL	12.53
	Adjusted Chi Square Value	937.7		95% Jackknife UCL	12.54
				95% Standard Bootstrap UCL	12.55
	Anderson-Darling Test Statistic	0.505		95% Bootstrap-t UCL	12.68
	Anderson-Darling 5% Critical Value	0.754		95% Hall's Bootstrap UCL	12.78
	Kolmogorov-Smirnov Test Statistic	0.0926		95% Percentile Bootstrap UCL	12.53
	Kolmogorov-Smirnov 5% Critical Value	0.0982		95% BCA Bootstrap UCL	12.6
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	14
Assuming Gamma Distribution				97.5% Chebyshev(Mean, Sd) UCL	15.02
	95% Approximate Gamma UCL	12.54		99% Chebyshev(Mean, Sd) UCL	17.03
	95% Adjusted Gamma UCL	12.56			
Potential UCL to Use				Use 95% Approximate Gamma UCL	12.54

Result or 1/2 SDL (phenanthrene)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		74
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0057		Minimum of Log Data	-5.159
	Maximum	12.6		Maximum of Log Data	2.534

Mean	0.512	Mean of log Data	-2.572
Median	0.063	SD of log Data	2.001
SD	1.543		
Coefficient of Variation	3.013		
Skewness	6.446		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.371	Lilliefors Test Statistic	0.132
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.794	95% H-UCL	1.186
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.312
95% Adjusted-CLT UCL	0.919	97.5% Chebyshev (MVUE) UCL	1.651
95% Modified-t UCL	0.814	99% Chebyshev (MVUE) UCL	2.317
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.348	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.472		
nu star	57.78		
Approximate Chi Square Value (.05)	41.31	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.791
Adjusted Chi Square Value	41.06	95% Jackknife UCL	0.794
		95% Standard Bootstrap UCL	0.795
Anderson-Darling Test Statistic	4.225	95% Bootstrap-t UCL	1.251
Anderson-Darling 5% Critical Value	0.853	95% Hall's Bootstrap UCL	1.967
Kolmogorov-Smirnov Test Statistic	0.182	95% Percentile Bootstrap UCL	0.802
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	0.965
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.251
		97.5% Chebyshev(Mean, Sd) UCL	1.57
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.198
95% Approximate Gamma UCL	0.717		
95% Adjusted Gamma UCL	0.721		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	2.198

Result or 1/2 SDL (pyrene)

General Statistics

Number of Valid Samples		83	Number of Unique Samples		76
Raw Statistics			Log-transformed Statistics		
Minimum	0.0055		Minimum of Log Data	-5.194	
Maximum	8.47		Maximum of Log Data	2.137	
Mean	0.533		Mean of log Data	-2.413	
Median	0.075		SD of log Data	1.994	
SD	1.209				
Coefficient of Variation	2.27				
Skewness	4.319				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.333	Lilliefors Test Statistic	0.0815
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.754	95% H-UCL	1.366
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.514
95% Adjusted-CLT UCL	0.818	97.5% Chebyshev (MVUE) UCL	1.905
95% Modified-t UCL	0.764	99% Chebyshev (MVUE) UCL	2.672
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.368	Data appear Lognormal at 5% Significance Level	
Theta Star	1.449		
nu star	61.04		
Approximate Chi Square Value (.05)	44.07	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.751
Adjusted Chi Square Value	43.82	95% Jackknife UCL	0.754
		95% Standard Bootstrap UCL	0.753
Anderson-Darling Test Statistic	3.7	95% Bootstrap-t UCL	0.873
Anderson-Darling 5% Critical Value	0.849	95% Hall's Bootstrap UCL	1.429
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	0.764
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.821
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.112
		97.5% Chebyshev(Mean, Sd) UCL	1.362
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.854
95% Approximate Gamma UCL	0.738		
95% Adjusted Gamma UCL	0.742		
Potential UCL to Use		Use 95% H-UCL	1.366

Result or 1/2 SDL (selenium)

General Statistics			
Number of Valid Samples		83	
		Number of Unique Samples	
		19	
Raw Statistics		Log-transformed Statistics	
Minimum	0.21	Minimum of Log Data	-1.561
Maximum	0.48	Maximum of Log Data	-0.734
Mean	0.258	Mean of log Data	-1.377
Median	0.24	SD of log Data	0.202
SD	0.0663		
Coefficient of Variation	0.257		
Skewness	2.645		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.363	Lilliefors Test Statistic	0.322
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL		0.27		95% H-UCL		0.267		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL				0.282
95% Adjusted-CLT UCL		0.272		97.5% Chebyshev (MVUE) UCL				0.293
95% Modified-t UCL		0.271		99% Chebyshev (MVUE) UCL				0.315
Gamma Distribution Test				Data Distribution				
k star (bias corrected)		20.56		Data do not follow a Discernable Distribution (0.05)				
Theta Star		0.0126						
nu star		3413						
Approximate Chi Square Value (.05)		3278		Nonparametric Statistics				
Adjusted Level of Significance		0.0471		95% CLT UCL		0.27		
Adjusted Chi Square Value		3276		95% Jackknife UCL		0.27		
				95% Standard Bootstrap UCL		0.27		
Anderson-Darling Test Statistic		13.15		95% Bootstrap-t UCL		0.274		
Anderson-Darling 5% Critical Value		0.75		95% Hall's Bootstrap UCL		0.272		
Kolmogorov-Smirnov Test Statistic		0.338		95% Percentile Bootstrap UCL		0.271		
Kolmogorov-Smirnov 5% Critical Value		0.0978		95% BCA Bootstrap UCL		0.273		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.29		
				97.5% Chebyshev(Mean, Sd) UCL		0.304		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.331		
95% Approximate Gamma UCL		0.269						
95% Adjusted Gamma UCL		0.269						
Potential UCL to Use				Use 95% Student's-t UCL		0.27		
				or 95% Modified-t UCL		0.271		
Result or 1/2 SDL (silver)								
General Statistics								
Number of Valid Samples		83		Number of Unique Samples		24		
Raw Statistics				Log-transformed Statistics				
Minimum		0.0235		Minimum of Log Data		-3.751		
Maximum		0.99		Maximum of Log Data		-0.0101		
Mean		0.0573		Mean of log Data		-3.388		
Median		0.0265		SD of log Data		0.715		
SD		0.125						
Coefficient of Variation		2.178						
Skewness		5.862						
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
Lilliefors Test Statistic		0.439		Lilliefors Test Statistic		0.413		
Lilliefors Critical Value		0.0973		Lilliefors Critical Value		0.0973		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL		0.08		95% H-UCL		0.0511		

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0599
95% Adjusted-CLT UCL	0.0892	97.5% Chebyshev (MVUE) UCL		0.0671
95% Modified-t UCL	0.0815	99% Chebyshev (MVUE) UCL		0.081
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	1.053	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0544			
nu star	174.9			
Approximate Chi Square Value (.05)	145.3	Nonparametric Statistics		
Adjusted Level of Significance	0.0471	95% CLT UCL		0.0798
Adjusted Chi Square Value	144.8	95% Jackknife UCL		0.08
		95% Standard Bootstrap UCL		0.0798
Anderson-Darling Test Statistic	21.47	95% Bootstrap-t UCL		0.108
Anderson-Darling 5% Critical Value	0.78	95% Hall's Bootstrap UCL		0.151
Kolmogorov-Smirnov Test Statistic	0.444	95% Percentile Bootstrap UCL		0.0815
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL		0.0919
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.117
		97.5% Chebyshev(Mean, Sd) UCL		0.143
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.193
95% Approximate Gamma UCL	0.0689			
95% Adjusted Gamma UCL	0.0691			
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL		0.117

Result or 1/2 SDL (strontium)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	76
Raw Statistics		Log-transformed Statistics	
Minimum	16.5	Minimum of Log Data	2.803
Maximum	527	Maximum of Log Data	6.267
Mean	70.61	Mean of log Data	4.06
Median	57.3	SD of log Data	0.583
SD	63.98		
Coefficient of Variation	0.906		
Skewness	5.044		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.241	Lilliefors Test Statistic	0.105
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	82.29	95% H-UCL	77.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	89.08
95% Adjusted-CLT UCL	86.31	97.5% Chebyshev (MVUE) UCL	97.96
95% Modified-t UCL	82.94	99% Chebyshev (MVUE) UCL	115.4
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	2.606	Data do not follow a Discernable Distribution (0.05)	
Theta Star	27.1		
nu star	432.5		
Approximate Chi Square Value (.05)	385.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	82.16
Adjusted Chi Square Value	384.5	95% Jackknife UCL	82.29
		95% Standard Bootstrap UCL	81.58
Anderson-Darling Test Statistic	2.313	95% Bootstrap-t UCL	91.45
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	135.7
Kolmogorov-Smirnov Test Statistic	0.156	95% Percentile Bootstrap UCL	82.83
Kolmogorov-Smirnov 5% Critical Value	0.099	95% BCA Bootstrap UCL	86.92
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	101.2
		97.5% Chebyshev(Mean, Sd) UCL	114.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	140.5
95% Approximate Gamma UCL	79.26		
95% Adjusted Gamma UCL	79.42		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	101.2

Result or 1/2 SDL (tin)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	35
Raw Statistics		Log-transformed Statistics	
Minimum	0.23	Minimum of Log Data	-1.47
Maximum	4.95	Maximum of Log Data	1.599
Mean	0.611	Mean of log Data	-0.898
Median	0.265	SD of log Data	0.768
SD	0.793		
Coefficient of Variation	1.296		
Skewness	3.22		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.325	Lilliefors Test Statistic	0.334
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.756	95% H-UCL	0.65
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.769
95% Adjusted-CLT UCL	0.787	97.5% Chebyshev (MVUE) UCL	0.866
95% Modified-t UCL	0.761	99% Chebyshev (MVUE) UCL	1.057
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.334	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.458		
nu star	221.4		
Approximate Chi Square Value (.05)	188	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.755

Adjusted Chi Square Value	187.4	95% Jackknife UCL	0.756
		95% Standard Bootstrap UCL	0.756
Anderson-Darling Test Statistic	11.5	95% Bootstrap-t UCL	0.816
Anderson-Darling 5% Critical Value	0.774	95% Hall's Bootstrap UCL	0.816
Kolmogorov-Smirnov Test Statistic	0.339	95% Percentile Bootstrap UCL	0.768
Kolmogorov-Smirnov 5% Critical Value	0.1	95% BCA Bootstrap UCL	0.802
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.991
		97.5% Chebyshev(Mean, Sd) UCL	1.155
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.477
95% Approximate Gamma UCL	0.72		
95% Adjusted Gamma UCL	0.722		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.991

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	71
Raw Statistics		Log-transformed Statistics	
Minimum	11.5	Minimum of Log Data	2.442
Maximum	645	Maximum of Log Data	6.469
Mean	29.8	Mean of log Data	3.055
Median	19.5	SD of log Data	0.544
SD	69.4		
Coefficient of Variation	2.329		
Skewness	8.71		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.396	Lilliefors Test Statistic	0.193
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	42.47	95% H-UCL	27.51
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.33
95% Adjusted-CLT UCL	50.11	97.5% Chebyshev (MVUE) UCL	34.27
95% Modified-t UCL	43.68	99% Chebyshev (MVUE) UCL	40.05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.568	Data do not follow a Discernable Distribution (0.05)	
Theta Star	19.01		
nu star	260.3		

Approximate Chi Square Value (.05)		Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	42.33
Adjusted Chi Square Value	223.3	95% Jackknife UCL	42.47
		95% Standard Bootstrap UCL	42.22
Anderson-Darling Test Statistic	11.79	95% Bootstrap-t UCL	96.34
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	87.12
Kolmogorov-Smirnov Test Statistic	0.289	95% Percentile Bootstrap UCL	44.62

Kolmogorov-Smirnov 5% Critical Value		0.0998	95% BCA Bootstrap UCL		53.78
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		63
			97.5% Chebyshev(Mean, Sd) UCL		77.37
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		105.6
95% Approximate Gamma UCL		34.64			
95% Adjusted Gamma UCL		34.73			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		63
Result or 1/2 SDL (vanadium)					
General Statistics					
Number of Valid Samples		83	Number of Unique Samples		67
Raw Statistics			Log-transformed Statistics		
Minimum		5.42	Minimum of Log Data		1.69
Maximum		45.6	Maximum of Log Data		3.82
Mean		13.76	Mean of log Data		2.538
Median		12.9	SD of log Data		0.404
SD		6.248			
Coefficient of Variation		0.454			
Skewness		2.186			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.113	Lilliefors Test Statistic		0.0671
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		14.9	95% H-UCL		14.87
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		16.46
95% Adjusted-CLT UCL		15.06	97.5% Chebyshev (MVUE) UCL		17.65
95% Modified-t UCL		14.93	99% Chebyshev (MVUE) UCL		19.98
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		5.932	Data appear Gamma Distributed at 5% Significance Level		
Theta Star		2.319			
nu star		984.6			
Approximate Chi Square Value (.05)		912.8	Nonparametric Statistics		
Adjusted Level of Significance		0.0471	95% CLT UCL		14.89
Adjusted Chi Square Value		911.6	95% Jackknife UCL		14.9
			95% Standard Bootstrap UCL		14.89
Anderson-Darling Test Statistic		0.532	95% Bootstrap-t UCL		15.15
Anderson-Darling 5% Critical Value		0.754	95% Hall's Bootstrap UCL		15.36
Kolmogorov-Smirnov Test Statistic		0.0752	95% Percentile Bootstrap UCL		14.94
Kolmogorov-Smirnov 5% Critical Value		0.0982	95% BCA Bootstrap UCL		15.03
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		16.75
			97.5% Chebyshev(Mean, Sd) UCL		18.04
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		20.58
95% Approximate Gamma UCL		14.84			

95% Adjusted Gamma UCL		14.86		
Potential UCL to Use			Use 95% Approximate Gamma UCL	
			14.84	
Result or 1/2 SDL (zinc)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples	
			81	
Raw Statistics			Log-transformed Statistics	
	Minimum	12.3		Minimum of Log Data
	Maximum	4770		Maximum of Log Data
	Mean	601.2		Mean of log Data
	Median	455		SD of log Data
	SD	672.8		
	Coefficient of Variation	1.119		
	Skewness	3.386		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Lilliefors Test Statistic	0.191		Lilliefors Test Statistic
	Lilliefors Critical Value	0.0973		Lilliefors Critical Value
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	724.1		95% H-UCL
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL
	95% Adjusted-CLT UCL	752		97.5% Chebyshev (MVUE) UCL
	95% Modified-t UCL	728.6		99% Chebyshev (MVUE) UCL
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	0.996	Data appear Gamma Distributed at 5% Significance Level	
	Theta Star	603.9		
	nu star	165.3		
	Approximate Chi Square Value (.05)	136.5	Nonparametric Statistics	
	Adjusted Level of Significance	0.0471		95% CLT UCL
	Adjusted Chi Square Value	136.1		95% Jackknife UCL
				95% Standard Bootstrap UCL
	Anderson-Darling Test Statistic	0.442		95% Bootstrap-t UCL
	Anderson-Darling 5% Critical Value	0.782		95% Hall's Bootstrap UCL
	Kolmogorov-Smirnov Test Statistic	0.0769		95% Percentile Bootstrap UCL
	Kolmogorov-Smirnov 5% Critical Value	0.101		95% BCA Bootstrap UCL
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL
				97.5% Chebyshev(Mean, Sd) UCL
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL
	95% Approximate Gamma UCL	727.7		
	95% Adjusted Gamma UCL	730.2		
Potential UCL to Use			Use 95% Approximate Gamma UCL	
			727.7	

APPENDIX A-2

SOUTH OF MARLIN SOIL

General UCL Statistics for Full Data Sets	
User Selected Options	
From File	J:\1352 - Gulfco RI\risk\data queries oct 07\EPC tables with onehalf DL\95% detect frequency soil S of m
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 SDL (1,3,5-trimethylbenzene)

General Statistics			
Number of Valid Samples		83	
Number of Unique Samples		58	
Raw Statistics		Log-transformed Statistics	
Minimum	3.7000E-5	Minimum of Log Data	-10.2
Maximum	4.36	Maximum of Log Data	1.472
Mean	0.099	Mean of log Data	-8.82
Median	7.4500E-5	SD of log Data	1.986
SD	0.632		
Coefficient of Variation	6.391		
Skewness	6.366		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.535	Lilliefors Test Statistic	0.397
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.214	95% H-UCL	0.0022
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0024
95% Adjusted-CLT UCL	0.265	97.5% Chebyshev (MVUE) UCL	0.0030
95% Modified-t UCL	0.223	99% Chebyshev (MVUE) UCL	0.0043
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.125	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.79		
nu star	20.8		
Approximate Chi Square Value (.05)	11.44	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.213
Adjusted Chi Square Value	11.32	95% Jackknife UCL	0.214
		95% Standard Bootstrap UCL	0.212
Anderson-Darling Test Statistic	28.64	95% Bootstrap-t UCL	67.91
Anderson-Darling 5% Critical Value	0.984	95% Hall's Bootstrap UCL	42.63
Kolmogorov-Smirnov Test Statistic	0.464	95% Percentile Bootstrap UCL	0.211
Kolmogorov-Smirnov 5% Critical Value	0.112	95% BCA Bootstrap UCL	0.29
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.402
		97.5% Chebyshev(Mean, Sd) UCL	0.532
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.79
95% Approximate Gamma UCL	0.18		
95% Adjusted Gamma UCL	0.182		

Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL		0.532
Result or 1/2 SDL (2-butanone)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples	
			81	
Raw Statistics		Log-transformed Statistics		
	Minimum	7.1500E-5	Minimum of Log Data	-9.546
	Maximum	0.06	Maximum of Log Data	-2.813
	Mean	0.0041	Mean of log Data	-6.321
	Median	0.0019	SD of log Data	1.38
	SD	0.0074		
	Coefficient of Variation	1.818		
	Skewness	5.537		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
	Lilliefors Test Statistic	0.294	Lilliefors Test Statistic	0.133
	Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0054	95% H-UCL	0.0069
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		
	95% Adjusted-CLT UCL	0.006	97.5% Chebyshev (MVUE) UCL	0.0103
	95% Modified-t UCL	0.0055	99% Chebyshev (MVUE) UCL	0.0137
Gamma Distribution Test		Data Distribution		
	k star (bias corrected)	0.708	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	0.0058		
	nu star	117.5		
Approximate Chi Square Value (.05)		93.51	Nonparametric Statistics	
	Adjusted Level of Significance	0.0471	95% CLT UCL	0.0054
	Adjusted Chi Square Value	93.13	95% Jackknife UCL	0.0054
			95% Standard Bootstrap UCL	0.0054
	Anderson-Darling Test Statistic	1.855	95% Bootstrap-t UCL	0.0068
	Anderson-Darling 5% Critical Value	0.796	95% Hall's Bootstrap UCL	0.0111
	Kolmogorov-Smirnov Test Statistic	0.134	95% Percentile Bootstrap UCL	0.0055
	Kolmogorov-Smirnov 5% Critical Value	0.102	95% BCA Bootstrap UCL	0.0064
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0077
			97.5% Chebyshev(Mean, Sd) UCL	0.0092
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0123
	95% Approximate Gamma UCL	0.0051		
	95% Adjusted Gamma UCL	0.0052		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL		0.0092
Result or 1/2 SDL (2-hexanone)				

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		79
Raw Statistics			Log-transformed Statistics		
Minimum		1.8900E-4	Minimum of Log Data		-8.574
Maximum		0.159	Maximum of Log Data		-1.842
Mean		0.0040	Mean of log Data		-7.35
Median		3.7750E-4	SD of log Data		1.34
SD		0.018			
Coefficient of Variation		4.426			
Skewness		7.989			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.415	Lilliefors Test Statistic		0.399
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0073	95% H-UCL		0.0023
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0028
95% Adjusted-CLT UCL		0.0091	97.5% Chebyshev (MVUE) UCL		0.0034
95% Modified-t UCL		0.0076	99% Chebyshev (MVUE) UCL		0.0045
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.358	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0113			
nu star		59.38			
Approximate Chi Square Value (.05)		42.66	Nonparametric Statistics		
Adjusted Level of Significance		0.0471	95% CLT UCL		0.0073
Adjusted Chi Square Value		42.41	95% Jackknife UCL		0.0073
			95% Standard Bootstrap UCL		0.0072
Anderson-Darling Test Statistic		20.58	95% Bootstrap-t UCL		0.0146
Anderson-Darling 5% Critical Value		0.851	95% Hall's Bootstrap UCL		0.0179
Kolmogorov-Smirnov Test Statistic		0.455	95% Percentile Bootstrap UCL		0.0078
Kolmogorov-Smirnov 5% Critical Value		0.106	95% BCA Bootstrap UCL		0.0102
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0127
			97.5% Chebyshev(Mean, Sd) UCL		0.0164
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0237
95% Approximate Gamma UCL		0.0056			
95% Adjusted Gamma UCL		0.0056			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.0164

Result or 1/2 SDL (2-methylnaphthalene)

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		84
Raw Statistics			Log-transformed Statistics		
Minimum		0.0047	Minimum of Log Data		-5.354

Maximum	7.21	Maximum of Log Data	1.975
Mean	0.0694	Mean of log Data	-4.533
Median	0.0056	SD of log Data	1.209
SD	0.561		
Coefficient of Variation	8.087		
Skewness	12.66		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.454	Lilliefors Test Statistic	0.354
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.141	95% H-UCL	0.0278
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0338
95% Adjusted-CLT UCL	0.187	97.5% Chebyshev (MVUE) UCL	0.0389
95% Modified-t UCL	0.149	99% Chebyshev (MVUE) UCL	0.0488
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.357	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.194		
nu star	118.4		
Approximate Chi Square Value (.05)	94.29	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.141
Adjusted Chi Square Value	94.11	95% Jackknife UCL	0.141
		95% Standard Bootstrap UCL	0.146
Anderson-Darling Test Statistic	6.024E+28	95% Bootstrap-t UCL	0.686
Anderson-Darling 5% Critical Value	0.854	95% Hall's Bootstrap UCL	0.403
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	0.155
Kolmogorov-Smirnov 5% Critical Value	0.078	95% BCA Bootstrap UCL	0.205
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.259
		97.5% Chebyshev(Mean, Sd) UCL	0.341
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.503
95% Approximate Gamma UCL	0.0871		
95% Adjusted Gamma UCL	0.0873		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.341

Result or 1/2 SDL (4,4'-ddd)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	100
Raw Statistics		Log-transformed Statistics	
Minimum	1.1750E-4	Minimum of Log Data	-9.049
Maximum	1.12	Maximum of Log Data	0.113
Mean	0.0076	Mean of log Data	-8.292
Median	1.3950E-4	SD of log Data	1.373
SD	0.0869		
Coefficient of Variation	11.34		

Skewness		12.86		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.473	Lilliefors Test Statistic	0.396	
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0188	95% H-UCL	8.4016E-4	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0010
95% Adjusted-CLT UCL	0.026	97.5% Chebyshev (MVUE) UCL	0.0012	
95% Modified-t UCL	0.0199	99% Chebyshev (MVUE) UCL	0.0015	
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.213	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0359			
nu star	70.78			
Approximate Chi Square Value (.05)	52.41	Nonparametric Statistics		
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0188	
Adjusted Chi Square Value	52.28	95% Jackknife UCL	0.0188	
		95% Standard Bootstrap UCL	0.0185	
Anderson-Darling Test Statistic	48.45	95% Bootstrap-t UCL	0.31	
Anderson-Darling 5% Critical Value	0.908	95% Hall's Bootstrap UCL	0.188	
Kolmogorov-Smirnov Test Statistic	0.432	95% Percentile Bootstrap UCL	0.0211	
Kolmogorov-Smirnov 5% Critical Value	0.08	95% BCA Bootstrap UCL	0.0345	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0371
		97.5% Chebyshev(Mean, Sd) UCL	0.0498	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0748
95% Approximate Gamma UCL	0.0104			
95% Adjusted Gamma UCL	0.0104			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	0.0498

Result or 1/2 SDL (4,4'-dde)

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		113
Raw Statistics			Log-transformed Statistics		
Minimum		1.6300E-4	Minimum of Log Data		-8.722
Maximum		0.0693	Maximum of Log Data		-2.669
Mean		0.0017	Mean of log Data		-7.973
Median		1.9425E-4	SD of log Data		1.22
SD		0.0076			
Coefficient of Variation		4.484			
Skewness		7.741			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.42	Lilliefors Test Statistic		0.379

Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0026	95% H-UCL		9.0739E-4
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0011
95% Adjusted-CLT UCL		0.0030	97.5% Chebyshev (MVUE) UCL		0.0012
95% Modified-t UCL		0.0027	99% Chebyshev (MVUE) UCL		0.0016
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.407	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0041			
nu star		135.2			
Approximate Chi Square Value (.05)		109.3	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		0.0026
Adjusted Chi Square Value		109.1	95% Jackknife UCL		0.0026
			95% Standard Bootstrap UCL		0.0026
Anderson-Darling Test Statistic		36.49	95% Bootstrap-t UCL		0.0043
Anderson-Darling 5% Critical Value		0.842	95% Hall's Bootstrap UCL		0.0063
Kolmogorov-Smirnov Test Statistic		0.408	95% Percentile Bootstrap UCL		0.0027
Kolmogorov-Smirnov 5% Critical Value		0.0775	95% BCA Bootstrap UCL		0.0032
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0042
			97.5% Chebyshev(Mean, Sd) UCL		0.0054
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0075
95% Approximate Gamma UCL		0.0021			
95% Adjusted Gamma UCL		0.0021			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.0054

Result or 1/2 SDL (4,4'-ddt)

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		114
Raw Statistics			Log-transformed Statistics		
Minimum		6.2500E-5	Minimum of Log Data		-9.68
Maximum		0.113	Maximum of Log Data		-2.18
Mean		0.0037	Mean of log Data		-7.782
Median		1.1075E-4	SD of log Data		2.033
SD		0.0114			
Coefficient of Variation		3.045			
Skewness		6.653			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.373	Lilliefors Test Statistic		0.27
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0051	95% H-UCL		0.0054

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0067
95% Adjusted-CLT UCL	0.0056	97.5% Chebyshev (MVUE) UCL		0.0083
95% Modified-t UCL	0.0052	99% Chebyshev (MVUE) UCL		0.0114
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.311	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.012			
nu star	103.2			
Approximate Chi Square Value (.05)	80.8	Nonparametric Statistics		
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0051	
Adjusted Chi Square Value	80.63	95% Jackknife UCL	0.0051	
		95% Standard Bootstrap UCL	0.0051	
Anderson-Darling Test Statistic	16.11	95% Bootstrap-t UCL	0.0064	
Anderson-Darling 5% Critical Value	0.866	95% Hall's Bootstrap UCL	0.0114	
Kolmogorov-Smirnov Test Statistic	0.256	95% Percentile Bootstrap UCL	0.0052	
Kolmogorov-Smirnov 5% Critical Value	0.0785	95% BCA Bootstrap UCL	0.0058	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0075	
		97.5% Chebyshev(Mean, Sd) UCL	0.0092	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0125	
95% Approximate Gamma UCL	0.0047			
95% Adjusted Gamma UCL	0.0047			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0125	
Result or 1/2 SDL (acenaphthene)				
General Statistics				
Number of Valid Samples	166	Number of Unique Samples	108	
Raw Statistics		Log-transformed Statistics		
Minimum	0.0043	Minimum of Log Data	-5.438	
Maximum	1.69	Maximum of Log Data	0.525	
Mean	0.0419	Mean of log Data	-4.516	
Median	0.0052	SD of log Data	1.296	
SD	0.15			
Coefficient of Variation	3.573			
Skewness	8.834			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Lilliefors Test Statistic	0.401	Lilliefors Test Statistic	0.359	
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	0.0611	95% H-UCL	0.0324	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0397	
95% Adjusted-CLT UCL	0.0696	97.5% Chebyshev (MVUE) UCL	0.046	
95% Modified-t UCL	0.0625	99% Chebyshev (MVUE) UCL	0.0584	
Gamma Distribution Test		Data Distribution		

k star (bias corrected)	0.472	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0889		
nu star	156.6		
Approximate Chi Square Value (.05)	128.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.061
Adjusted Chi Square Value	128.4	95% Jackknife UCL	0.0611
		95% Standard Bootstrap UCL	0.0611
Anderson-Darling Test Statistic	27.1	95% Bootstrap-t UCL	0.0864
Anderson-Darling 5% Critical Value	0.826	95% Hall's Bootstrap UCL	0.133
Kolmogorov-Smirnov Test Statistic	0.369	95% Percentile Bootstrap UCL	0.0627
Kolmogorov-Smirnov 5% Critical Value	0.0768	95% BCA Bootstrap UCL	0.0746
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0926
		97.5% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.158
95% Approximate Gamma UCL	0.051		
95% Adjusted Gamma UCL	0.0511		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.115

Result or 1/2 SDL (acenaphthylene)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	79
Raw Statistics		Log-transformed Statistics	
Minimum	0.0049	Minimum of Log Data	-5.312
Maximum	1.2	Maximum of Log Data	0.182
Mean	0.042	Mean of log Data	-4.467
Median	0.0058	SD of log Data	1.213
SD	0.149		
Coefficient of Variation	3.543		
Skewness	6.646		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.402	Lilliefors Test Statistic	0.365
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0612	95% H-UCL	0.0299
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0364
95% Adjusted-CLT UCL	0.0674	97.5% Chebyshev (MVUE) UCL	0.0418
95% Modified-t UCL	0.0621	99% Chebyshev (MVUE) UCL	0.0526
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.486	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0865		
nu star	161.3		
Approximate Chi Square Value (.05)	133	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.061

Adjusted Chi Square Value	132.7	95% Jackknife UCL	0.0612
		95% Standard Bootstrap UCL	0.0608
Anderson-Darling Test Statistic	28.55	95% Bootstrap-t UCL	0.0779
Anderson-Darling 5% Critical Value	0.822	95% Hall's Bootstrap UCL	0.0621
Kolmogorov-Smirnov Test Statistic	0.375	95% Percentile Bootstrap UCL	0.0624
Kolmogorov-Smirnov 5% Critical Value	0.0767	95% BCA Bootstrap UCL	0.0687
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0924
		97.5% Chebyshev(Mean, Sd) UCL	0.114
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.157
95% Approximate Gamma UCL	0.051		
95% Adjusted Gamma UCL	0.0511		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.114

Result or 1/2 SDL (acetone)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	77
Raw Statistics		Log-transformed Statistics	
Minimum	8.5500E-5	Minimum of Log Data	-9.367
Maximum	0.16	Maximum of Log Data	-1.833
Mean	0.0145	Mean of log Data	-6.403
Median	0.0021	SD of log Data	2.342
SD	0.0317		
Coefficient of Variation	2.181		
Skewness	3.374		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.328	Lilliefors Test Statistic	0.26
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0203	95% H-UCL	0.0684
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0654
95% Adjusted-CLT UCL	0.0216	97.5% Chebyshev (MVUE) UCL	0.0838
95% Modified-t UCL	0.0205	99% Chebyshev (MVUE) UCL	0.12
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.312	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0466		
nu star	51.74		
Approximate Chi Square Value (.05)	36.22	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0202
Adjusted Chi Square Value	35.99	95% Jackknife UCL	0.0203
		95% Standard Bootstrap UCL	0.0204
Anderson-Darling Test Statistic	5.243	95% Bootstrap-t UCL	0.0229
Anderson-Darling 5% Critical Value	0.862	95% Hall's Bootstrap UCL	0.0216
Kolmogorov-Smirnov Test Statistic	0.246	95% Percentile Bootstrap UCL	0.0206

Kolmogorov-Smirnov 5% Critical Value		0.106	95% BCA Bootstrap UCL		0.0217
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0297
			97.5% Chebyshev(Mean, Sd) UCL		0.0362
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0491
95% Approximate Gamma UCL		0.0207			
95% Adjusted Gamma UCL		0.0209			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.0491
Result or 1/2 SDL (aluminum)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		149
Raw Statistics			Log-transformed Statistics		
Minimum		414	Minimum of Log Data		6.026
Maximum		15700	Maximum of Log Data		9.661
Mean		6452	Mean of log Data		8.565
Median		6175	SD of log Data		0.718
SD		3601			
Coefficient of Variation		0.558			
Skewness		0.362			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.0643	Lilliefors Test Statistic		0.106
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		6914	95% H-UCL		7566
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		8609
95% Adjusted-CLT UCL		6920	97.5% Chebyshev (MVUE) UCL		9402
95% Modified-t UCL		6916	99% Chebyshev (MVUE) UCL		10961
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		2.531	Data appear Normal at 5% Significance Level		
Theta Star		2550			
nu star		840.1			
Approximate Chi Square Value (.05)		773.9	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		6912
Adjusted Chi Square Value		773.3	95% Jackknife UCL		6914
			95% Standard Bootstrap UCL		6909
Anderson-Darling Test Statistic		1.49	95% Bootstrap-t UCL		6915
Anderson-Darling 5% Critical Value		0.762	95% Hall's Bootstrap UCL		6904
Kolmogorov-Smirnov Test Statistic		0.0875	95% Percentile Bootstrap UCL		6905
Kolmogorov-Smirnov 5% Critical Value		0.0731	95% BCA Bootstrap UCL		6915
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		7670
			97.5% Chebyshev(Mean, Sd) UCL		8197
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		9233
95% Approximate Gamma UCL		7004			

95% Adjusted Gamma UCL		7009		
Potential UCL to Use			Use 95% Student's-t UCL	6914
Result or 1/2 SDL (anthracene)				
General Statistics				
Number of Valid Samples		166	Number of Unique Samples 103	
Raw Statistics			Log-transformed Statistics	
	Minimum	0.0049	Minimum of Log Data	-5.316
	Maximum	2.46	Maximum of Log Data	0.9
	Mean	0.0874	Mean of log Data	-4.023
	Median	0.0060	SD of log Data	1.563
	SD	0.254		
	Coefficient of Variation	2.9		
	Skewness	6.356		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Lilliefors Test Statistic	0.372	Lilliefors Test Statistic	0.273
	Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	0.12	95% H-UCL	0.0843
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.105
	95% Adjusted-CLT UCL	0.13	97.5% Chebyshev (MVUE) UCL	0.125
	95% Modified-t UCL	0.122	99% Chebyshev (MVUE) UCL	0.164
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	0.409	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	0.214		
	nu star	135.9		
	Approximate Chi Square Value (.05)	110	Nonparametric Statistics	
	Adjusted Level of Significance	0.0486	95% CLT UCL	0.12
	Adjusted Chi Square Value	109.8	95% Jackknife UCL	0.12
			95% Standard Bootstrap UCL	0.12
	Anderson-Darling Test Statistic	20.06	95% Bootstrap-t UCL	0.142
	Anderson-Darling 5% Critical Value	0.841	95% Hall's Bootstrap UCL	0.173
	Kolmogorov-Smirnov Test Statistic	0.274	95% Percentile Bootstrap UCL	0.122
	Kolmogorov-Smirnov 5% Critical Value	0.0775	95% BCA Bootstrap UCL	0.136
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.173
			97.5% Chebyshev(Mean, Sd) UCL	0.21
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.283
	95% Approximate Gamma UCL	0.108		
	95% Adjusted Gamma UCL	0.108		
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	0.21

[illegible]

[1](#)
[2](#)
[3](#)
[4](#)
[5](#)
[6](#)
[7](#)
[8](#)
[9](#)
[10](#)
[11](#)
[12](#)
[13](#)
[14](#)
[15](#)
[16](#)
[17](#)
[18](#)
[19](#)
[20](#)
[21](#)
[22](#)
[23](#)
[24](#)
[25](#)
[26](#)
[27](#)
[28](#)
[29](#)
[30](#)
[31](#)
[32](#)
[33](#)
[34](#)
[35](#)
[36](#)
[37](#)
[38](#)
[39](#)
[40](#)
[41](#)
[42](#)
[43](#)
[44](#)
[45](#)
[46](#)
[47](#)
[48](#)
[49](#)
[50](#)
[51](#)
[52](#)
[53](#)
[54](#)
[55](#)
[56](#)
[57](#)
[58](#)
[59](#)
[60](#)
[61](#)
[62](#)
[63](#)
[64](#)
[65](#)
[66](#)
[67](#)
[68](#)
[69](#)
[70](#)
[71](#)
[72](#)
[73](#)
[74](#)
[75](#)
[76](#)
[77](#)
[78](#)
[79](#)
[80](#)
[81](#)
[82](#)
[83](#)
[84](#)
[85](#)
[86](#)
[87](#)
[88](#)
[89](#)
[90](#)
[91](#)
[92](#)
[93](#)
[94](#)
[95](#)
[96](#)
[97](#)
[98](#)
[99](#)
[100](#)

Number of Valid Samples		166	Number of Unique Samples		83
Raw Statistics			Log-transformed Statistics		
	Minimum	0.095		Minimum of Log Data	-2.354
	Maximum	5.51		Maximum of Log Data	1.707
	Mean	1.023		Mean of log Data	-0.654
	Median	0.24		SD of log Data	1.192
	SD	1.14			
	Coefficient of Variation	1.114			
	Skewness	1.329			

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.291	Lilliefors Test Statistic	0.262
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.17	95% H-UCL	1.313
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.594
95% Adjusted-CLT UCL	1.179	97.5% Chebyshev (MVUE) UCL	1.829
95% Modified-t UCL	1.171	99% Chebyshev (MVUE) UCL	2.291
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.856	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.196		
nu star	284.1		
Approximate Chi Square Value (.05)	246	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	1.169
Adjusted Chi Square Value	245.7	95% Jackknife UCL	1.17
		95% Standard Bootstrap UCL	1.169
Anderson-Darling Test Statistic	12.23	95% Bootstrap-t UCL	1.179
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	1.185
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL	1.179
Kolmogorov-Smirnov 5% Critical Value	0.0749	95% BCA Bootstrap UCL	1.169
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.409
		97.5% Chebyshev(Mean, Sd) UCL	1.576
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.904
95% Approximate Gamma UCL	1.182		
95% Adjusted Gamma UCL	1.183		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	1.576

Result or 1/2 SDL (aroclor-1254)

General Statistics

Number of Valid Samples	174	Number of Unique Samples	115
-------------------------	-----	--------------------------	-----

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0016		Minimum of Log Data	-6.422
	Maximum	11.5		Maximum of Log Data	2.442
	Mean	0.205		Mean of log Data	-5.38
	Median	0.0019		SD of log Data	1.955
	SD	1.131			
	Coefficient of Variation	5.523			
	Skewness	8.01			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.443		Lilliefors Test Statistic	0.402
	Lilliefors Critical Value	0.0672		Lilliefors Critical Value	0.0672
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.347		95% H-UCL	0.0496
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0618
	95% Adjusted-CLT UCL	0.401		97.5% Chebyshev (MVUE) UCL	0.0754
	95% Modified-t UCL	0.355		99% Chebyshev (MVUE) UCL	0.102
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.195	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	1.049			
	nu star	67.95			
	Approximate Chi Square Value (.05)	49.98	Nonparametric Statistics		
	Adjusted Level of Significance	0.0486		95% CLT UCL	0.346
	Adjusted Chi Square Value	49.85		95% Jackknife UCL	0.347
				95% Standard Bootstrap UCL	0.344
	Anderson-Darling Test Statistic	46.09		95% Bootstrap-t UCL	0.573
	Anderson-Darling 5% Critical Value	0.922		95% Hall's Bootstrap UCL	0.86
	Kolmogorov-Smirnov Test Statistic	0.437		95% Percentile Bootstrap UCL	0.36
	Kolmogorov-Smirnov 5% Critical Value	0.0782		95% BCA Bootstrap UCL	0.439
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.578
				97.5% Chebyshev(Mean, Sd) UCL	0.74
				99% Chebyshev(Mean, Sd) UCL	1.058
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	0.278			
	95% Adjusted Gamma UCL	0.279			
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL	0.74

Result or 1/2 SDL (arsenic)

General Statistics					
	Number of Valid Samples	166		Number of Unique Samples	146
Raw Statistics			Log-transformed Statistics		
	Minimum	0.085		Minimum of Log Data	-2.465
	Maximum	24.3		Maximum of Log Data	3.19
	Mean	3.331		Mean of log Data	0.67
	Median	2.68		SD of log Data	1.225

SD	3.269		
Coefficient of Variation	0.981		
Skewness	2.631		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.16	Lilliefors Test Statistic	0.155
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.751	95% H-UCL	5.182
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.311
95% Adjusted-CLT UCL	3.804	97.5% Chebyshev (MVUE) UCL	7.266
95% Modified-t UCL	3.76	99% Chebyshev (MVUE) UCL	9.141
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.057	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.15		
nu star	351.1		
Approximate Chi Square Value (.05)	308.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	3.749
Adjusted Chi Square Value	308.3	95% Jackknife UCL	3.751
		95% Standard Bootstrap UCL	3.736
Anderson-Darling Test Statistic	1.15	95% Bootstrap-t UCL	3.826
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	3.838
Kolmogorov-Smirnov Test Statistic	0.0872	95% Percentile Bootstrap UCL	3.765
Kolmogorov-Smirnov 5% Critical Value	0.0744	95% BCA Bootstrap UCL	3.782
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.437
		97.5% Chebyshev(Mean, Sd) UCL	4.916
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.856
95% Approximate Gamma UCL	3.789		
95% Adjusted Gamma UCL	3.793		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	4.916

Result or 1/2 SDL (barium)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	135
Raw Statistics		Log-transformed Statistics	
Minimum	18.6	Minimum of Log Data	2.923
Maximum	2180	Maximum of Log Data	7.687
Mean	237.4	Mean of log Data	5.104
Median	139.5	SD of log Data	0.789
SD	274.8		
Coefficient of Variation	1.158		
Skewness	3.69		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.276		Lilliefors Test Statistic		0.126	
Lilliefors Critical Value		0.0688		Lilliefors Critical Value		0.0688	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		272.7		95% H-UCL		254.2	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			
95% Adjusted-CLT UCL		279		97.5% Chebyshev (MVUE) UCL		321.9	
95% Modified-t UCL		273.7		99% Chebyshev (MVUE) UCL		379.8	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.489		Data do not follow a Discernable Distribution (0.05)			
Theta Star		159.4					
nu star		494.5					
Approximate Chi Square Value (.05)		443.9		Nonparametric Statistics			
Adjusted Level of Significance		0.0486		95% CLT UCL		272.5	
Adjusted Chi Square Value		443.5		95% Jackknife UCL		272.7	
				95% Standard Bootstrap UCL		271.5	
Anderson-Darling Test Statistic		7.901		95% Bootstrap-t UCL		282.1	
Anderson-Darling 5% Critical Value		0.771		95% Hall's Bootstrap UCL		283.4	
Kolmogorov-Smirnov Test Statistic		0.186		95% Percentile Bootstrap UCL		274.8	
Kolmogorov-Smirnov 5% Critical Value		0.0738		95% BCA Bootstrap UCL		279.3	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		330.4	
				97.5% Chebyshev(Mean, Sd) UCL		370.6	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		449.6	
95% Approximate Gamma UCL		264.4					
95% Adjusted Gamma UCL		264.7					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		330.4	
Result or 1/2 SDL (benzene)							
General Statistics							
Number of Valid Samples		83		Number of Unique Samples		78	
Raw Statistics				Log-transformed Statistics			
Minimum		4.7500E-5		Minimum of Log Data		-9.955	
Maximum		0.0221		Maximum of Log Data		-3.812	
Mean		0.0040		Mean of log Data		-5.975	
Median		0.0032		SD of log Data		1.26	
SD		0.0036					
Coefficient of Variation		0.883					
Skewness		2.64					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.135		Lilliefors Test Statistic		0.182	
Lilliefors Critical Value		0.0973		Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL		0.0047		95% H-UCL		0.0079		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL				0.0098
95% Adjusted-CLT UCL		0.0048		97.5% Chebyshev (MVUE) UCL		0.0117		
95% Modified-t UCL		0.0047		99% Chebyshev (MVUE) UCL		0.0153		
Gamma Distribution Test				Data Distribution				
k star (bias corrected)		1.16		Data do not follow a Discernable Distribution (0.05)				
Theta Star		0.0035						
nu star		192.5						
Approximate Chi Square Value (.05)		161.4		Nonparametric Statistics				
Adjusted Level of Significance		0.0471		95% CLT UCL		0.0047		
Adjusted Chi Square Value		160.9		95% Jackknife UCL		0.0047		
				95% Standard Bootstrap UCL		0.0047		
Anderson-Darling Test Statistic		1.58		95% Bootstrap-t UCL		0.0049		
Anderson-Darling 5% Critical Value		0.778		95% Hall's Bootstrap UCL		0.0050		
Kolmogorov-Smirnov Test Statistic		0.114		95% Percentile Bootstrap UCL		0.0047		
Kolmogorov-Smirnov 5% Critical Value		0.101		95% BCA Bootstrap UCL		0.0049		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0058		
				97.5% Chebyshev(Mean, Sd) UCL		0.0065		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0080		
95% Approximate Gamma UCL		0.0048						
95% Adjusted Gamma UCL		0.0048						
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL		0.0065		
Result or 1/2 SDL (benzo(a)anthracene)								
General Statistics								
Number of Valid Samples		166		Number of Unique Samples		110		
Raw Statistics				Log-transformed Statistics				
Minimum		0.0044		Minimum of Log Data		-5.415		
Maximum		5.02		Maximum of Log Data		1.613		
Mean		0.268		Mean of log Data		-3.885		
Median		0.0054		SD of log Data		2.05		
SD		0.765						
Coefficient of Variation		2.854						
Skewness		4.224						
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
Lilliefors Test Statistic		0.395		Lilliefors Test Statistic		0.315		
Lilliefors Critical Value		0.0688		Lilliefors Critical Value		0.0688		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL		0.366		95% H-UCL		0.281		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.347		
95% Adjusted-CLT UCL		0.386		97.5% Chebyshev (MVUE) UCL		0.427		
95% Modified-t UCL		0.369		99% Chebyshev (MVUE) UCL		0.584		

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.272	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.986		
nu star	90.22		
Approximate Chi Square Value (.05)	69.32	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.366
Adjusted Chi Square Value	69.16	95% Jackknife UCL	0.366
		95% Standard Bootstrap UCL	0.362
Anderson-Darling Test Statistic	26.03	95% Bootstrap-t UCL	0.399
Anderson-Darling 5% Critical Value	0.881	95% Hall's Bootstrap UCL	0.394
Kolmogorov-Smirnov Test Statistic	0.324	95% Percentile Bootstrap UCL	0.37
Kolmogorov-Smirnov 5% Critical Value	0.0791	95% BCA Bootstrap UCL	0.385
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.527
		97.5% Chebyshev(Mean, Sd) UCL	0.639
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.859
95% Approximate Gamma UCL	0.349		
95% Adjusted Gamma UCL	0.35		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.859

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	137
Raw Statistics		Log-transformed Statistics	
Minimum	0.0044	Minimum of Log Data	-5.419
Maximum	4.88	Maximum of Log Data	1.585
Mean	0.347	Mean of log Data	-3.193
Median	0.0253	SD of log Data	2.033
SD	0.856		
Coefficient of Variation	2.468		
Skewness	3.524		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.348	Lilliefors Test Statistic	0.137
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.457	95% H-UCL	0.54
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.666
95% Adjusted-CLT UCL	0.475	97.5% Chebyshev (MVUE) UCL	0.819
95% Modified-t UCL	0.46	99% Chebyshev (MVUE) UCL	1.12
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.318	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.09		
nu star	105.6		

Approximate Chi Square Value (.05)		82.89	Nonparametric Statistics	
Adjusted Level of Significance		0.0486	95% CLT UCL	0.456
Adjusted Chi Square Value		82.71	95% Jackknife UCL	0.457
			95% Standard Bootstrap UCL	0.456
Anderson-Darling Test Statistic		13.58	95% Bootstrap-t UCL	0.481
Anderson-Darling 5% Critical Value		0.864	95% Hall's Bootstrap UCL	0.476
Kolmogorov-Smirnov Test Statistic		0.217	95% Percentile Bootstrap UCL	0.46
Kolmogorov-Smirnov 5% Critical Value		0.0784	95% BCA Bootstrap UCL	0.482
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.636
			97.5% Chebyshev(Mean, Sd) UCL	0.762
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	1.008
95% Approximate Gamma UCL		0.442		
95% Adjusted Gamma UCL		0.443		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	1.008
Result or 1/2 SDL (benzo(b)fluoranthene)				
General Statistics				
Number of Valid Samples		166	Number of Unique Samples	145
Raw Statistics			Log-transformed Statistics	
Minimum		0.0033	Minimum of Log Data	-5.688
Maximum		5.97	Maximum of Log Data	1.787
Mean		0.466	Mean of log Data	-2.669
Median		0.0825	SD of log Data	2.179
SD		1.023		
Coefficient of Variation		2.192		
Skewness		3.432		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic		0.325	Lilliefors Test Statistic	0.16
Lilliefors Critical Value		0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL		0.598	95% H-UCL	1.322
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	1.605
95% Adjusted-CLT UCL		0.62	97.5% Chebyshev (MVUE) UCL	1.992
95% Modified-t UCL		0.601	99% Chebyshev (MVUE) UCL	2.752
Gamma Distribution Test			Data Distribution	
k star (bias corrected)		0.35	Data do not follow a Discernable Distribution (0.05)	
Theta Star		1.332		
nu star		116.2		
Approximate Chi Square Value (.05)		92.33	Nonparametric Statistics	
Adjusted Level of Significance		0.0486	95% CLT UCL	0.597
Adjusted Chi Square Value		92.15	95% Jackknife UCL	0.598
			95% Standard Bootstrap UCL	0.6
Anderson-Darling Test Statistic		6.109	95% Bootstrap-t UCL	0.629

Anderson-Darling 5% Critical Value	0.856	95% Hall's Bootstrap UCL	0.624
Kolmogorov-Smirnov Test Statistic	0.144	95% Percentile Bootstrap UCL	0.604
Kolmogorov-Smirnov 5% Critical Value	0.0781	95% BCA Bootstrap UCL	0.609
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.812
		97.5% Chebyshev(Mean, Sd) UCL	0.962
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.256
95% Approximate Gamma UCL	0.587		
95% Adjusted Gamma UCL	0.588		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.256

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	125
Raw Statistics		Log-transformed Statistics	
Minimum	0.0044	Minimum of Log Data	-5.418
Maximum	4.24	Maximum of Log Data	1.445
Mean	0.251	Mean of log Data	-3.365
Median	0.026	SD of log Data	1.982
SD	0.606		
Coefficient of Variation	2.415		
Skewness	3.815		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.342	Lilliefors Test Statistic	0.221
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.329	95% H-UCL	0.401
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.497
95% Adjusted-CLT UCL	0.343	97.5% Chebyshev (MVUE) UCL	0.609
95% Modified-t UCL	0.331	99% Chebyshev (MVUE) UCL	0.83
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.338	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.742		
nu star	112.4		
Approximate Chi Square Value (.05)	88.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.328
Adjusted Chi Square Value	88.72	95% Jackknife UCL	0.329
		95% Standard Bootstrap UCL	0.331
Anderson-Darling Test Statistic	13.2	95% Bootstrap-t UCL	0.352
Anderson-Darling 5% Critical Value	0.859	95% Hall's Bootstrap UCL	0.347
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	0.329
Kolmogorov-Smirnov 5% Critical Value	0.0782	95% BCA Bootstrap UCL	0.342
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.456
		97.5% Chebyshev(Mean, Sd) UCL	0.545

Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.719
95% Approximate Gamma UCL		0.317				
95% Adjusted Gamma UCL		0.318				
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL			0.545
Result or 1/2 SDL (benzo(k)fluoranthene)						
General Statistics						
Number of Valid Samples		166	Number of Unique Samples			92
Raw Statistics			Log-transformed Statistics			
Minimum		0.0068	Minimum of Log Data		-4.984	
Maximum		4.25	Maximum of Log Data		1.447	
Mean		0.157	Mean of log Data		-3.763	
Median		0.0082	SD of log Data		1.667	
SD		0.457				
Coefficient of Variation		2.917				
Skewness		5.523				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Lilliefors Test Statistic		0.372	Lilliefors Test Statistic		0.335	
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		0.215	95% H-UCL		0.134	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.168	
95% Adjusted-CLT UCL		0.231	97.5% Chebyshev (MVUE) UCL		0.201	
95% Modified-t UCL		0.218	99% Chebyshev (MVUE) UCL		0.266	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.35	Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.448				
nu star		116.1				
Approximate Chi Square Value (.05)		92.22	Nonparametric Statistics			
Adjusted Level of Significance		0.0486	95% CLT UCL		0.215	
Adjusted Chi Square Value		92.03	95% Jackknife UCL		0.215	
			95% Standard Bootstrap UCL		0.212	
Anderson-Darling Test Statistic		26.6	95% Bootstrap-t UCL		0.241	
Anderson-Darling 5% Critical Value		0.856	95% Hall's Bootstrap UCL		0.263	
Kolmogorov-Smirnov Test Statistic		0.344	95% Percentile Bootstrap UCL		0.219	
Kolmogorov-Smirnov 5% Critical Value		0.0781	95% BCA Bootstrap UCL		0.234	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.311	
			97.5% Chebyshev(Mean, Sd) UCL		0.378	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.509	
95% Approximate Gamma UCL		0.197				
95% Adjusted Gamma UCL		0.197				
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.378	

Result or 1/2 SDL (beryllium)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	86
Raw Statistics		Log-transformed Statistics	
Minimum	0.0015	Minimum of Log Data	-6.47
Maximum	4.6	Maximum of Log Data	1.526
Mean	0.465	Mean of log Data	-1.111
Median	0.415	SD of log Data	1.003
SD	0.42		
Coefficient of Variation	0.903		
Skewness	5.93		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.153	Lilliefors Test Statistic	0.151
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.519	95% H-UCL	0.644
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.764
95% Adjusted-CLT UCL	0.534	97.5% Chebyshev (MVUE) UCL	0.86
95% Modified-t UCL	0.521	99% Chebyshev (MVUE) UCL	1.049
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.57	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.296		
nu star	521.2		
Approximate Chi Square Value (.05)	469.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.518
Adjusted Chi Square Value	468.9	95% Jackknife UCL	0.519
		95% Standard Bootstrap UCL	0.518
Anderson-Darling Test Statistic	2.638	95% Bootstrap-t UCL	0.544
Anderson-Darling 5% Critical Value	0.77	95% Hall's Bootstrap UCL	0.772
Kolmogorov-Smirnov Test Statistic	0.0955	95% Percentile Bootstrap UCL	0.52
Kolmogorov-Smirnov 5% Critical Value	0.0737	95% BCA Bootstrap UCL	0.535
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.607
		97.5% Chebyshev(Mean, Sd) UCL	0.668
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.789
95% Approximate Gamma UCL	0.516		
95% Adjusted Gamma UCL	0.517		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.668
Result or 1/2 SDL (biphenyl)			
General Statistics			

Number of Valid Samples		166	Number of Unique Samples		69
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0049		Minimum of Log Data	-5.318
	Maximum	1.02		Maximum of Log Data	0.0198
	Mean	0.0219		Mean of log Data	-4.728
	Median	0.0057		SD of log Data	0.949
	SD	0.085			
	Coefficient of Variation	3.873			
	Skewness	10.41			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.421		Lilliefors Test Statistic	0.405
	Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0328		95% H-UCL	0.0162
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0191
	95% Adjusted-CLT UCL	0.0385		97.5% Chebyshev (MVUE) UCL	0.0214
	95% Modified-t UCL	0.0337		99% Chebyshev (MVUE) UCL	0.0259
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.662	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.0332			
	nu star	219.7			
	Approximate Chi Square Value (.05)	186.4	Nonparametric Statistics		
	Adjusted Level of Significance	0.0486		95% CLT UCL	0.0328
	Adjusted Chi Square Value	186.1		95% Jackknife UCL	0.0328
				95% Standard Bootstrap UCL	0.0328
	Anderson-Darling Test Statistic	33.77		95% Bootstrap-t UCL	0.0641
	Anderson-Darling 5% Critical Value	0.804		95% Hall's Bootstrap UCL	0.0786
	Kolmogorov-Smirnov Test Statistic	0.43		95% Percentile Bootstrap UCL	0.0344
	Kolmogorov-Smirnov 5% Critical Value	0.0757		95% BCA Bootstrap UCL	0.0415
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0507
Assuming Gamma Distribution				97.5% Chebyshev(Mean, Sd) UCL	0.0631
	95% Approximate Gamma UCL	0.0259		99% Chebyshev(Mean, Sd) UCL	0.0875
	95% Adjusted Gamma UCL	0.0259			
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	0.0507

Result or 1/2 SDL (boron)

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		114
Raw Statistics			Log-transformed Statistics		
	Minimum	0.475		Minimum of Log Data	-0.744
	Maximum	54.4		Maximum of Log Data	3.996

Mean	4.811	Mean of log Data	0.742
Median	1.475	SD of log Data	1.361
SD	6.242		
Coefficient of Variation	1.298		
Skewness	3.515		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.244	Lilliefors Test Statistic	0.253
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.612	95% H-UCL	6.904
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.515
95% Adjusted-CLT UCL	5.749	97.5% Chebyshev (MVUE) UCL	9.929
95% Modified-t UCL	5.634	99% Chebyshev (MVUE) UCL	12.71
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.716	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6.716		
nu star	237.8		
Approximate Chi Square Value (.05)	203.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	5.608
Adjusted Chi Square Value	202.9	95% Jackknife UCL	5.612
		95% Standard Bootstrap UCL	5.63
Anderson-Darling Test Statistic	11.51	95% Bootstrap-t UCL	5.814
Anderson-Darling 5% Critical Value	0.798	95% Hall's Bootstrap UCL	5.949
Kolmogorov-Smirnov Test Statistic	0.252	95% Percentile Bootstrap UCL	5.594
Kolmogorov-Smirnov 5% Critical Value	0.0754	95% BCA Bootstrap UCL	5.756
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.923
		97.5% Chebyshev(Mean, Sd) UCL	7.837
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.632
95% Approximate Gamma UCL	5.633		
95% Adjusted Gamma UCL	5.64		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	7.837

Result or 1/2 SDL (butyl benzyl phthalate)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	69
Raw Statistics		Log-transformed Statistics	
Minimum	0.0054	Minimum of Log Data	-5.212
Maximum	0.617	Maximum of Log Data	-0.483
Mean	0.0203	Mean of log Data	-4.633
Median	0.0064	SD of log Data	0.906
SD	0.0558		
Coefficient of Variation	2.752		
Skewness	8.42		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.395	Lilliefors Test Statistic	0.392
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0274	95% H-UCL	0.017
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0199
95% Adjusted-CLT UCL	0.0304	97.5% Chebyshev (MVUE) UCL	0.0222
95% Modified-t UCL	0.0279	99% Chebyshev (MVUE) UCL	0.0266
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.797	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0255		
nu star	264.5		
Approximate Chi Square Value (.05)	227.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0274
Adjusted Chi Square Value	227.5	95% Jackknife UCL	0.0274
		95% Standard Bootstrap UCL	0.0273
Anderson-Darling Test Statistic	32.49	95% Bootstrap-t UCL	0.0361
Anderson-Darling 5% Critical Value	0.793	95% Hall's Bootstrap UCL	0.058
Kolmogorov-Smirnov Test Statistic	0.418	95% Percentile Bootstrap UCL	0.0288
Kolmogorov-Smirnov 5% Critical Value	0.0751	95% BCA Bootstrap UCL	0.0313
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0392
		97.5% Chebyshev(Mean, Sd) UCL	0.0473
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0634
95% Approximate Gamma UCL	0.0235		
95% Adjusted Gamma UCL	0.0236		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0392
Result or 1/2 SDL (cadmium)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	76
Raw Statistics		Log-transformed Statistics	
Minimum	0.0085	Minimum of Log Data	-4.768
Maximum	9.71	Maximum of Log Data	2.273
Mean	0.335	Mean of log Data	-2.576
Median	0.11	SD of log Data	1.888
SD	0.859		
Coefficient of Variation	2.561		
Skewness	8.46		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.352	Lilliefors Test Statistic	0.227
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.446		95% H-UCL		0.709	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			
95% Adjusted-CLT UCL		0.492		97.5% Chebyshev (MVUE) UCL		1.077	
95% Modified-t UCL		0.453		99% Chebyshev (MVUE) UCL		1.454	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.433		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.773					
nu star		143.9					
Approximate Chi Square Value (.05)		117.2		Nonparametric Statistics			
Adjusted Level of Significance		0.0486		95% CLT UCL		0.445	
Adjusted Chi Square Value		117		95% Jackknife UCL		0.446	
				95% Standard Bootstrap UCL		0.446	
Anderson-Darling Test Statistic		8.005		95% Bootstrap-t UCL		0.55	
Anderson-Darling 5% Critical Value		0.835		95% Hall's Bootstrap UCL		0.893	
Kolmogorov-Smirnov Test Statistic		0.204		95% Percentile Bootstrap UCL		0.452	
Kolmogorov-Smirnov 5% Critical Value		0.0772		95% BCA Bootstrap UCL		0.511	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.626	
				97.5% Chebyshev(Mean, Sd) UCL		0.751	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.998	
95% Approximate Gamma UCL		0.412					
95% Adjusted Gamma UCL		0.412					
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL		0.751	
Result or 1/2 SDL (carbazole)							
General Statistics							
Number of Valid Samples		166		Number of Unique Samples		112	
Raw Statistics				Log-transformed Statistics			
Minimum		0.0043		Minimum of Log Data		-5.444	
Maximum		1.54		Maximum of Log Data		0.432	
Mean		0.0459		Mean of log Data		-4.438	
Median		0.0052		SD of log Data		1.335	
SD		0.148					
Coefficient of Variation		3.227					
Skewness		7.508					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.389		Lilliefors Test Statistic		0.328	
Lilliefors Critical Value		0.0688		Lilliefors Critical Value		0.0688	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0649		95% H-UCL		0.0372	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0458	

95% Adjusted-CLT UCL	0.0719	97.5% Chebyshev (MVUE) UCL	0.0533
95% Modified-t UCL	0.066	99% Chebyshev (MVUE) UCL	0.068
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.468	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0981		
nu star	155.3		
Approximate Chi Square Value (.05)	127.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0648
Adjusted Chi Square Value	127.3	95% Jackknife UCL	0.0649
		95% Standard Bootstrap UCL	0.0653
Anderson-Darling Test Statistic	24.68	95% Bootstrap-t UCL	0.0833
Anderson-Darling 5% Critical Value	0.827	95% Hall's Bootstrap UCL	0.137
Kolmogorov-Smirnov Test Statistic	0.334	95% Percentile Bootstrap UCL	0.0656
Kolmogorov-Smirnov 5% Critical Value	0.0769	95% BCA Bootstrap UCL	0.0769
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.096
		97.5% Chebyshev(Mean, Sd) UCL	0.118
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.16
95% Approximate Gamma UCL	0.0559		
95% Adjusted Gamma UCL	0.056		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.118

Result or 1/2 SDL (carbon disulfide)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	52
Raw Statistics		Log-transformed Statistics	
Minimum	2.5000E-5	Minimum of Log Data	-10.6
Maximum	0.028	Maximum of Log Data	-3.576
Mean	0.0012	Mean of log Data	-8.944
Median	5.1000E-5	SD of log Data	1.844
SD	0.0039		
Coefficient of Variation	3.144		
Skewness	5.355		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.387	Lilliefors Test Statistic	0.389
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0019	95% H-UCL	0.0013
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0015
95% Adjusted-CLT UCL	0.0022	97.5% Chebyshev (MVUE) UCL	0.0019
95% Modified-t UCL	0.0020	99% Chebyshev (MVUE) UCL	0.0027
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.3	Data do not follow a Discernable Distribution (0.05)	

Theta Star	0.0042		
nu star	49.81		
Approximate Chi Square Value (.05)	34.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0019
Adjusted Chi Square Value	34.38	95% Jackknife UCL	0.0019
		95% Standard Bootstrap UCL	0.0019
Anderson-Darling Test Statistic	16.26	95% Bootstrap-t UCL	0.0031
Anderson-Darling 5% Critical Value	0.865	95% Hall's Bootstrap UCL	0.0053
Kolmogorov-Smirnov Test Statistic	0.427	95% Percentile Bootstrap UCL	0.0020
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	0.0023
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0031
		97.5% Chebyshev(Mean, Sd) UCL	0.004
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0056
95% Approximate Gamma UCL	0.0018		
95% Adjusted Gamma UCL	0.0018		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.004

Result or 1/2 SDL (chromium)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	144
Raw Statistics		Log-transformed Statistics	
Minimum	2.03	Minimum of Log Data	0.708
Maximum	136	Maximum of Log Data	4.913
Mean	13.53	Mean of log Data	2.41
Median	10.55	SD of log Data	0.582
SD	12.49		
Coefficient of Variation	0.923		
Skewness	6.346		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.215	Lilliefors Test Statistic	0.0792
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	15.13	95% H-UCL	14.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.96
95% Adjusted-CLT UCL	15.63	97.5% Chebyshev (MVUE) UCL	17.17
95% Modified-t UCL	15.21	99% Chebyshev (MVUE) UCL	19.54
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.677	Data do not follow a Discernable Distribution (0.05)	
Theta Star	5.053		
nu star	888.9		
Approximate Chi Square Value (.05)	820.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	15.12
Adjusted Chi Square Value	820.1	95% Jackknife UCL	15.13

[illegible]

Result or 1/2 SDL (chrysene)

General Statistics

Number of Valid Samples		166	Number of Unique Samples		151
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0042		Minimum of Log Data	-5.47
	Maximum	4.87		Maximum of Log Data	1.583
	Mean	0.327		Mean of log Data	-3.244
	Median	0.0291		SD of log Data	2.065
	SD	0.79			
	Coefficient of Variation	2.415			
	Skewness	3.488			

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.347	Lilliefors Test Statistic	0.14
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.429	95% H-UCL	0.555
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.683
95% Adjusted-CLT UCL	0.446	97.5% Chebyshev (MVUE) UCL	0.841
95% Modified-t UCL	0.432	99% Chebyshev (MVUE) UCL	1.153
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.319	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.027		
nu star	105.9		
Approximate Chi Square Value (.05)	83.11	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.428
Adjusted Chi Square Value	82.93	95% Jackknife UCL	0.429
		95% Standard Bootstrap UCL	0.43
Anderson-Darling Test Statistic	12.67	95% Bootstrap-t UCL	0.449
Anderson-Darling 5% Critical Value	0.864	95% Hall's Bootstrap UCL	0.452
Kolmogorov-Smirnov Test Statistic	0.207	95% Percentile Bootstrap UCL	0.438
Kolmogorov-Smirnov 5% Critical Value	0.0784	95% BCA Bootstrap UCL	0.453

Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.595
				97.5% Chebyshev(Mean, Sd) UCL		0.711
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.938
95% Approximate Gamma UCL		0.417				
95% Adjusted Gamma UCL		0.418				
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.938
Result or 1/2 SDL (cobalt)						
General Statistics						
Number of Valid Samples		166	Number of Unique Samples		146	
Raw Statistics			Log-transformed Statistics			
Minimum		0.0125	Minimum of Log Data		-4.382	
Maximum		16	Maximum of Log Data		2.773	
Mean		4.144	Mean of log Data		1.255	
Median		3.965	SD of log Data		0.754	
SD		2.047				
Coefficient of Variation		0.494				
Skewness		1.346				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Lilliefors Test Statistic		0.0667	Lilliefors Test Statistic		0.143	
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688	
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		4.407	95% H-UCL		5.234	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		5.989	
95% Adjusted-CLT UCL		4.423	97.5% Chebyshev (MVUE) UCL		6.567	
95% Modified-t UCL		4.41	99% Chebyshev (MVUE) UCL		7.703	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		3.105	Data appear Normal at 5% Significance Level			
Theta Star		1.335				
nu star		1031				
Approximate Chi Square Value (.05)		957.4	Nonparametric Statistics			
Adjusted Level of Significance		0.0486	95% CLT UCL		4.406	
Adjusted Chi Square Value		956.8	95% Jackknife UCL		4.407	
			95% Standard Bootstrap UCL		4.41	
Anderson-Darling Test Statistic		2.317	95% Bootstrap-t UCL		4.422	
Anderson-Darling 5% Critical Value		0.759	95% Hall's Bootstrap UCL		4.447	
Kolmogorov-Smirnov Test Statistic		0.0839	95% Percentile Bootstrap UCL		4.392	
Kolmogorov-Smirnov 5% Critical Value		0.0729	95% BCA Bootstrap UCL		4.432	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		4.837	
			97.5% Chebyshev(Mean, Sd) UCL		5.137	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		5.725	
95% Approximate Gamma UCL		4.462				
95% Adjusted Gamma UCL		4.465				

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		74
Raw Statistics			Log-transformed Statistics		
Minimum		4.4350E-4	Minimum of Log Data		-7.721
Maximum		21.7	Maximum of Log Data		3.077
Mean		0.266	Mean of log Data		-6.38
Median		0.0014	SD of log Data		1.598
SD		2.381			
Coefficient of Variation		8.952			
Skewness		9.11			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.517	Lilliefors Test Statistic		0.265
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.701	95% H-UCL		0.0101
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0122
95% Adjusted-CLT UCL		0.975	97.5% Chebyshev (MVUE) UCL		0.0149
95% Modified-t UCL		0.744	99% Chebyshev (MVUE) UCL		0.0203
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.154	Data do not follow a Discernable Distribution (0.05)		
Theta Star		1.724			
nu star		25.61			
Approximate Chi Square Value (.05)		15.08	Nonparametric Statistics		
Adjusted Level of Significance		0.0471	95% CLT UCL		0.696
Adjusted Chi Square Value		14.94	95% Jackknife UCL		0.701
			95% Standard Bootstrap UCL		0.692
Anderson-Darling Test Statistic		25.11	95% Bootstrap-t UCL		98.46
Anderson-Darling 5% Critical Value		0.956	95% Hall's Bootstrap UCL		48.51
Kolmogorov-Smirnov Test Statistic		0.433	95% Percentile Bootstrap UCL		0.789
Kolmogorov-Smirnov 5% Critical Value		0.11	95% BCA Bootstrap UCL		1.052
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.405
			97.5% Chebyshev(Mean, Sd) UCL		1.898
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		2.867
95% Approximate Gamma UCL		0.452			
95% Adjusted Gamma UCL		0.456			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		1.898

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		130
Raw Statistics			Log-transformed Statistics		

Minimum	0.0042	Minimum of Log Data	-5.466
Maximum	1.64	Maximum of Log Data	0.495
Mean	0.113	Mean of log Data	-3.906
Median	0.0052	SD of log Data	1.817
SD	0.252		
Coefficient of Variation	2.229		
Skewness	3.609		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.333	Lilliefors Test Statistic	0.325
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.146	95% H-UCL	0.159
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.199
95% Adjusted-CLT UCL	0.151	97.5% Chebyshev (MVUE) UCL	0.242
95% Modified-t UCL	0.147	99% Chebyshev (MVUE) UCL	0.324
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.38	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.298		
nu star	126.3		
Approximate Chi Square Value (.05)	101.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.145
Adjusted Chi Square Value	101.2	95% Jackknife UCL	0.146
		95% Standard Bootstrap UCL	0.146
Anderson-Darling Test Statistic	18.02	95% Bootstrap-t UCL	0.153
Anderson-Darling 5% Critical Value	0.848	95% Hall's Bootstrap UCL	0.151
Kolmogorov-Smirnov Test Statistic	0.329	95% Percentile Bootstrap UCL	0.148
Kolmogorov-Smirnov 5% Critical Value	0.0778	95% BCA Bootstrap UCL	0.15
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.199
		97.5% Chebyshev(Mean, Sd) UCL	0.236
		99% Chebyshev(Mean, Sd) UCL	0.308
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.141		
95% Adjusted Gamma UCL	0.141		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.236

Result or 1/2 SDL (dibenzofuran)

General Statistics

Number of Valid Samples		166	Number of Unique Samples		77
Raw Statistics			Log-transformed Statistics		
Minimum	0.0062		Minimum of Log Data	-5.083	
Maximum	0.821		Maximum of Log Data	-0.197	
Mean	0.0309		Mean of log Data	-4.369	
Median	0.0073		SD of log Data	1.051	
SD	0.0826				

Coefficient of Variation		2.671		
Skewness		7.081		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Lilliefors Test Statistic	0.382	Lilliefors Test Statistic	0.383	
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	0.0415	95% H-UCL	0.0263	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0314	
95% Adjusted-CLT UCL	0.0452	97.5% Chebyshev (MVUE) UCL	0.0356	
95% Modified-t UCL	0.0421	99% Chebyshev (MVUE) UCL	0.0437	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.672	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.046			
nu star	223.1			
Approximate Chi Square Value (.05)	189.5	Nonparametric Statistics		
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0414	
Adjusted Chi Square Value	189.2	95% Jackknife UCL	0.0415	
		95% Standard Bootstrap UCL	0.0416	
Anderson-Darling Test Statistic	29.15	95% Bootstrap-t UCL	0.0517	
Anderson-Darling 5% Critical Value	0.803	95% Hall's Bootstrap UCL	0.0884	
Kolmogorov-Smirnov Test Statistic	0.402	95% Percentile Bootstrap UCL	0.0425	
Kolmogorov-Smirnov 5% Critical Value	0.0757	95% BCA Bootstrap UCL	0.0466	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0588	
		97.5% Chebyshev(Mean, Sd) UCL	0.0709	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0947	
95% Approximate Gamma UCL	0.0364			
95% Adjusted Gamma UCL	0.0364			
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0709	
Result or 1/2 SDL (dieltrin)				
General Statistics				
Number of Valid Samples	166	Number of Unique Samples	96	
Raw Statistics		Log-transformed Statistics		
Minimum	7.0000E-5	Minimum of Log Data	-9.567	
Maximum	0.0205	Maximum of Log Data	-3.887	
Mean	9.0075E-4	Mean of log Data	-8.536	
Median	8.5500E-5	SD of log Data	1.433	
SD	0.0025			
Coefficient of Variation	2.865			
Skewness	5.111			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

95% Student's-t UCL		0.0492	95% H-UCL		0.0352
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0409
95% Adjusted-CLT UCL		0.0521	97.5% Chebyshev (MVUE) UCL		0.0453
95% Modified-t UCL		0.0497	99% Chebyshev (MVUE) UCL		0.054
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.941	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0416			
nu star		312.3			
Approximate Chi Square Value (.05)		272.4	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		0.0491
Adjusted Chi Square Value		272.1	95% Jackknife UCL		0.0492
			95% Standard Bootstrap UCL		0.0492
Anderson-Darling Test Statistic		34.67	95% Bootstrap-t UCL		0.0549
Anderson-Darling 5% Critical Value		0.786	95% Hall's Bootstrap UCL		0.0617
Kolmogorov-Smirnov Test Statistic		0.428	95% Percentile Bootstrap UCL		0.0497
Kolmogorov-Smirnov 5% Critical Value		0.0747	95% BCA Bootstrap UCL		0.0524
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0657
			97.5% Chebyshev(Mean, Sd) UCL		0.0772
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0998
95% Approximate Gamma UCL		0.0448			
95% Adjusted Gamma UCL		0.0449			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		0.0657
Result or 1/2 SDL (endosulfan sulfate)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		105
Raw Statistics			Log-transformed Statistics		
Minimum		1.3250E-4	Minimum of Log Data		-8.929
Maximum		0.0713	Maximum of Log Data		-2.641
Mean		0.0013	Mean of log Data		-8.164
Median		1.5825E-4	SD of log Data		1.216
SD		0.0061			
Coefficient of Variation		4.659			
Skewness		9.667			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.423	Lilliefors Test Statistic		0.372
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0021	95% H-UCL		7.4558E-4
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		9.0731E-4
95% Adjusted-CLT UCL		0.0024	97.5% Chebyshev (MVUE) UCL		0.0010
95% Modified-t UCL		0.0021	99% Chebyshev (MVUE) UCL		0.0013

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.422	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0031		
nu star	140		
Approximate Chi Square Value (.05)	113.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0021
Adjusted Chi Square Value	113.5	95% Jackknife UCL	0.0021
		95% Standard Bootstrap UCL	0.0021
Anderson-Darling Test Statistic	34.91	95% Bootstrap-t UCL	0.0036
Anderson-Darling 5% Critical Value	0.838	95% Hall's Bootstrap UCL	0.0048
Kolmogorov-Smirnov Test Statistic	0.398	95% Percentile Bootstrap UCL	0.0021
Kolmogorov-Smirnov 5% Critical Value	0.0774	95% BCA Bootstrap UCL	0.0026
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0033
		97.5% Chebyshev(Mean, Sd) UCL	0.0042
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0060
95% Approximate Gamma UCL	0.0016		
95% Adjusted Gamma UCL	0.0016		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0042

Result or 1/2 SDL (endrin aldehyde)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	117
Raw Statistics		Log-transformed Statistics	
Minimum	1.6800E-4	Minimum of Log Data	-8.692
Maximum	0.0738	Maximum of Log Data	-2.606
Mean	0.0019	Mean of log Data	-7.839
Median	2.0050E-4	SD of log Data	1.344
SD	0.0073		
Coefficient of Variation	3.692		
Skewness	7.123		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.402	Lilliefors Test Statistic	0.383
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0029	95% H-UCL	0.0012
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0015
95% Adjusted-CLT UCL	0.0032	97.5% Chebyshev (MVUE) UCL	0.0018
95% Modified-t UCL	0.0029	99% Chebyshev (MVUE) UCL	0.0023

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.402	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0049		
nu star	133.4		
Approximate Chi Square Value (.05)	107.7	Nonparametric Statistics	

Adjusted Level of Significance	0.0486	95% CLT UCL	0.0029
Adjusted Chi Square Value	107.5	95% Jackknife UCL	0.0029
		95% Standard Bootstrap UCL	0.0029
Anderson-Darling Test Statistic	33.76	95% Bootstrap-t UCL	0.0036
Anderson-Darling 5% Critical Value	0.843	95% Hall's Bootstrap UCL	0.0062
Kolmogorov-Smirnov Test Statistic	0.409	95% Percentile Bootstrap UCL	0.003
Kolmogorov-Smirnov 5% Critical Value	0.0776	95% BCA Bootstrap UCL	0.0032
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0044
		97.5% Chebyshev(Mean, Sd) UCL	0.0055
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0076
95% Approximate Gamma UCL	0.0024		
95% Adjusted Gamma UCL	0.0024		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0055
Result or 1/2 SDL (endrin ketone)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	121
Raw Statistics		Log-transformed Statistics	
Minimum	2.1300E-4	Minimum of Log Data	-8.454
Maximum	0.0241	Maximum of Log Data	-3.726
Mean	0.0013	Mean of log Data	-7.664
Median	2.5250E-4	SD of log Data	1.185
SD	0.0032		
Coefficient of Variation	2.337		
Skewness	4.403		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.362	Lilliefors Test Statistic	0.376
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0017	95% H-UCL	0.0011
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0014
95% Adjusted-CLT UCL	0.0018	97.5% Chebyshev (MVUE) UCL	0.0016
95% Modified-t UCL	0.0018	99% Chebyshev (MVUE) UCL	0.0020
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.571	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0024		
nu star	189.7		
Approximate Chi Square Value (.05)	158.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0017
Adjusted Chi Square Value	158.6	95% Jackknife UCL	0.0017
		95% Standard Bootstrap UCL	0.0017
Anderson-Darling Test Statistic	30.37	95% Bootstrap-t UCL	0.0019
Anderson-Darling 5% Critical Value	0.813	95% Hall's Bootstrap UCL	0.0019

Kolmogorov-Smirnov Test Statistic	0.398	95% Percentile Bootstrap UCL	0.0017
Kolmogorov-Smirnov 5% Critical Value	0.0762	95% BCA Bootstrap UCL	0.0018
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0024
		97.5% Chebyshev(Mean, Sd) UCL	0.0029
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0038
95% Approximate Gamma UCL	0.0016		
95% Adjusted Gamma UCL	0.0016		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0029

Result or 1/2 SDL (ethylbenzene)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	74
Raw Statistics		Log-transformed Statistics	
Minimum	7.7000E-5	Minimum of Log Data	-9.472
Maximum	0.105	Maximum of Log Data	-2.254
Mean	0.0038	Mean of log Data	-7.113
Median	0.0016	SD of log Data	1.759
SD	0.0129		
Coefficient of Variation	3.35		
Skewness	6.622		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.392	Lilliefors Test Statistic	0.2
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0062	95% H-UCL	0.0069
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0081
95% Adjusted-CLT UCL	0.0072	97.5% Chebyshev (MVUE) UCL	0.0101
95% Modified-t UCL	0.0063	99% Chebyshev (MVUE) UCL	0.014
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.413	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0093		
nu star	68.55		
Approximate Chi Square Value (.05)	50.49	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0061
Adjusted Chi Square Value	50.22	95% Jackknife UCL	0.0062
		95% Standard Bootstrap UCL	0.0061
Anderson-Darling Test Statistic	5.613	95% Bootstrap-t UCL	0.0094
Anderson-Darling 5% Critical Value	0.838	95% Hall's Bootstrap UCL	0.0082
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	0.0064
Kolmogorov-Smirnov 5% Critical Value	0.105	95% BCA Bootstrap UCL	0.0074
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.01
		97.5% Chebyshev(Mean, Sd) UCL	0.0127
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0179

95% Approximate Gamma UCL		0.0052			
95% Adjusted Gamma UCL		0.0052			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.0127
Result or 1/2 SDL (fluoranthene)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		131
Raw Statistics			Log-transformed Statistics		
Minimum		0.0053	Minimum of Log Data		-5.231
Maximum		14.2	Maximum of Log Data		2.653
Mean		0.594	Mean of log Data		-2.889
Median		0.0409	SD of log Data		2.179
SD		1.674			
Coefficient of Variation		2.82			
Skewness		5.022			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.363	Lilliefors Test Statistic		0.148
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.809	95% H-UCL		1.062
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		1.289
95% Adjusted-CLT UCL		0.861	97.5% Chebyshev (MVUE) UCL		1.6
95% Modified-t UCL		0.817	99% Chebyshev (MVUE) UCL		2.21
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.291	Data do not follow a Discernable Distribution (0.05)		
Theta Star		2.039			
nu star		96.67			
Approximate Chi Square Value (.05)		74.99	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		0.807
Adjusted Chi Square Value		74.82	95% Jackknife UCL		0.809
			95% Standard Bootstrap UCL		0.811
Anderson-Darling Test Statistic		13.04	95% Bootstrap-t UCL		0.906
Anderson-Darling 5% Critical Value		0.872	95% Hall's Bootstrap UCL		0.935
Kolmogorov-Smirnov Test Statistic		0.211	95% Percentile Bootstrap UCL		0.823
Kolmogorov-Smirnov 5% Critical Value		0.0788	95% BCA Bootstrap UCL		0.89
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.16
			97.5% Chebyshev(Mean, Sd) UCL		1.405
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1.886
95% Approximate Gamma UCL		0.765			
95% Adjusted Gamma UCL		0.767			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		1.886

Result or 1/2 SDL (fluorene)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	120
Raw Statistics		Log-transformed Statistics	
Minimum	0.0043	Minimum of Log Data	-5.449
Maximum	1.11	Maximum of Log Data	0.104
Mean	0.0442	Mean of log Data	-4.461
Median	0.0051	SD of log Data	1.337
SD	0.129		
Coefficient of Variation	2.919		
Skewness	5.759		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.379	Lilliefors Test Statistic	0.34
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0607	95% H-UCL	0.0365
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0449
95% Adjusted-CLT UCL	0.0654	97.5% Chebyshev (MVUE) UCL	0.0523
95% Modified-t UCL	0.0615	99% Chebyshev (MVUE) UCL	0.0667
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.472	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0935		
nu star	156.9		
Approximate Chi Square Value (.05)	128.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.0606
Adjusted Chi Square Value	128.7	95% Jackknife UCL	0.0607
		95% Standard Bootstrap UCL	0.0605
Anderson-Darling Test Statistic	25.32	95% Bootstrap-t UCL	0.069
Anderson-Darling 5% Critical Value	0.826	95% Hall's Bootstrap UCL	0.0687
Kolmogorov-Smirnov Test Statistic	0.349	95% Percentile Bootstrap UCL	0.0617
Kolmogorov-Smirnov 5% Critical Value	0.0768	95% BCA Bootstrap UCL	0.065
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0878
		97.5% Chebyshev(Mean, Sd) UCL	0.107
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.144
95% Approximate Gamma UCL	0.0538		
95% Adjusted Gamma UCL	0.0539		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.107
Result or 1/2 SDL (gamma-chlordane)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	95

Raw Statistics				Log-transformed Statistics			
	Minimum	1.1000E-4		Minimum of Log Data	-9.115		
	Maximum	0.0156		Maximum of Log Data	-4.16		
	Mean	6.9043E-4		Mean of log Data	-8.462		
	Median	1.3050E-4		SD of log Data	1.117		
	SD	0.0020					
	Coefficient of Variation	3.004					
	Skewness	5.46					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Lilliefors Test Statistic	0.403		Lilliefors Test Statistic	0.401		
	Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	9.5669E-4		95% H-UCL	4.8009E-4		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	5.7780E-4		
	95% Adjusted-CLT UCL	0.0010		97.5% Chebyshev (MVUE) UCL	6.5819E-4		
	95% Modified-t UCL	9.6806E-4		99% Chebyshev (MVUE) UCL	8.1611E-4		
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	0.526		Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0013					
	nu star	174.6					
	Approximate Chi Square Value (.05)	145		Nonparametric Statistics			
	Adjusted Level of Significance	0.0486		95% CLT UCL	9.5520E-4		
	Adjusted Chi Square Value	144.8		95% Jackknife UCL	9.5669E-4		
				95% Standard Bootstrap UCL	9.5122E-4		
	Anderson-Darling Test Statistic	37.97		95% Bootstrap-t UCL	0.0011		
	Anderson-Darling 5% Critical Value	0.817		95% Hall's Bootstrap UCL	0.0010		
	Kolmogorov-Smirnov Test Statistic	0.436		95% Percentile Bootstrap UCL	9.6795E-4		
	Kolmogorov-Smirnov 5% Critical Value	0.0764		95% BCA Bootstrap UCL	0.0010		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0013		
				97.5% Chebyshev(Mean, Sd) UCL	0.0017		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.0022		
	95% Approximate Gamma UCL	8.3116E-4					
	95% Adjusted Gamma UCL	8.3251E-4					
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL	0.0017		
Result or 1/2 SDL (heptachlorobiphenyl (170))							
General Statistics							
	Number of Valid Samples	27		Number of Unique Samples	18		
Raw Statistics				Log-transformed Statistics			
	Minimum	5.4000E-5		Minimum of Log Data	-9.827		
	Maximum	0.0112		Maximum of Log Data	-4.492		
	Mean	5.0765E-4		Mean of log Data	-9.29		

Median	6.0500E-5	SD of log Data	1.109
SD	0.0021		
Coefficient of Variation	4.214		
Skewness	5.179		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.22	Shapiro Wilk Test Statistic	0.497
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0012	95% H-UCL	3.0157E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.4359E-4
95% Adjusted-CLT UCL	0.0016	97.5% Chebyshev (MVUE) UCL	4.2093E-4
95% Modified-t UCL	0.0012	99% Chebyshev (MVUE) UCL	5.7284E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.37	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0013		
nu star	19.96		
Approximate Chi Square Value (.05)	10.82	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0011
Adjusted Chi Square Value	10.39	95% Jackknife UCL	0.0012
		95% Standard Bootstrap UCL	0.0011
Anderson-Darling Test Statistic	7.791	95% Bootstrap-t UCL	0.0215
Anderson-Darling 5% Critical Value	0.833	95% Hall's Bootstrap UCL	0.0127
Kolmogorov-Smirnov Test Statistic	0.427	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.181	95% BCA Bootstrap UCL	0.0021
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0023
		97.5% Chebyshev(Mean, Sd) UCL	0.0030
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0046
95% Approximate Gamma UCL	9.3640E-4		
95% Adjusted Gamma UCL	9.7515E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0046

Result or 1/2 SDL (heptachlorobiphenyl (180))

General Statistics

Number of Valid Samples	27	Number of Unique Samples	21
Raw Statistics		Log-transformed Statistics	
Minimum	5.7500E-5	Minimum of Log Data	-9.764
Maximum	0.0183	Maximum of Log Data	-4.001
Mean	8.0478E-4	Mean of log Data	-9.025
Median	6.6000E-5	SD of log Data	1.215
SD	0.0035		
Coefficient of Variation	4.347		
Skewness	5.186		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.219	Shapiro Wilk Test Statistic	0.6
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0019	95% H-UCL	4.8616E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.3266E-4
95% Adjusted-CLT UCL	0.0026	97.5% Chebyshev (MVUE) UCL	6.5892E-4
95% Modified-t UCL	0.0020	99% Chebyshev (MVUE) UCL	9.0693E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.339	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0023		
nu star	18.3		
Approximate Chi Square Value (.05)	9.605	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0019
Adjusted Chi Square Value	9.203	95% Jackknife UCL	0.0019
Anderson-Darling Test Statistic	6.864	95% Standard Bootstrap UCL	0.0018
Anderson-Darling 5% Critical Value	0.841	95% Bootstrap-t UCL	0.0297
Kolmogorov-Smirnov Test Statistic	0.394	95% Hall's Bootstrap UCL	0.0148
Kolmogorov-Smirnov 5% Critical Value	0.181	95% Percentile Bootstrap UCL	0.0021
Data not Gamma Distributed at 5% Significance Level		95% BCA Bootstrap UCL	0.0028
		95% Chebyshev(Mean, Sd) UCL	0.0037
Assuming Gamma Distribution		97.5% Chebyshev(Mean, Sd) UCL	0.0050
95% Approximate Gamma UCL	0.0015	99% Chebyshev(Mean, Sd) UCL	0.0075
95% Adjusted Gamma UCL	0.0016		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0075

Result or 1/2 SDL (heptachlorobiphenyl (183))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	6.6000E-5	Minimum of Log Data	-9.626
Maximum	0.0058	Maximum of Log Data	-5.148
Mean	3.0648E-4	Mean of log Data	-9.286
Median	7.3500E-5	SD of log Data	0.928
SD	0.0011		
Coefficient of Variation	3.607		
Skewness	5.118		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.228	Shapiro Wilk Test Statistic	0.339
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		6.6932E-4		95% H-UCL		2.2061E-4	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		2.6206E-4	
95% Adjusted-CLT UCL		8.8028E-4		97.5% Chebyshev (MVUE) UCL		3.1504E-4	
95% Modified-t UCL		7.0424E-4		99% Chebyshev (MVUE) UCL		4.1912E-4	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.493		Data do not follow a Discernable Distribution (0.05)			
Theta Star		6.2145E-4					
nu star		26.63					
Approximate Chi Square Value (.05)		15.87		Nonparametric Statistics			
Adjusted Level of Significance		0.0401		95% CLT UCL		6.5639E-4	
Adjusted Chi Square Value		15.33		95% Jackknife UCL		6.6932E-4	
				95% Standard Bootstrap UCL		6.4808E-4	
Anderson-Darling Test Statistic		9.122		95% Bootstrap-t UCL		0.0818	
Anderson-Darling 5% Critical Value		0.805		95% Hall's Bootstrap UCL		0.0174	
Kolmogorov-Smirnov Test Statistic		0.544		95% Percentile Bootstrap UCL		7.3128E-4	
Kolmogorov-Smirnov 5% Critical Value		0.178		95% BCA Bootstrap UCL		9.6457E-4	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0012	
				97.5% Chebyshev(Mean, Sd) UCL		0.0016	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0024	
95% Approximate Gamma UCL		5.1442E-4					
95% Adjusted Gamma UCL		5.3225E-4					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.0012	

Result or 1/2 SDL (heptachlorobiphenyl (187))

General Statistics			
Number of Valid Samples		27	Number of Unique Samples
			19
Raw Statistics		Log-transformed Statistics	
Minimum	5.1000E-5	Minimum of Log Data	-9.884
Maximum	0.0134	Maximum of Log Data	-4.313
Mean	5.9919E-4	Mean of log Data	-9.225
Median	5.8000E-5	SD of log Data	1.173
SD	0.0025		
Coefficient of Variation	4.273		
Skewness	5.183		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.221	Shapiro Wilk Test Statistic	0.574
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0014	95% H-UCL	3.6512E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.0685E-4
95% Adjusted-CLT UCL	0.0019	97.5% Chebyshev (MVUE) UCL	5.0141E-4

95% Modified-t UCL	0.0015	99% Chebyshev (MVUE) UCL	6.8716E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.353	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0017		
nu star	19.06		
Approximate Chi Square Value (.05)	10.16	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0014
Adjusted Chi Square Value	9.748	95% Jackknife UCL	0.0014
		95% Standard Bootstrap UCL	0.0013
Anderson-Darling Test Statistic	7.089	95% Bootstrap-t UCL	0.0208
Anderson-Darling 5% Critical Value	0.837	95% Hall's Bootstrap UCL	0.0119
Kolmogorov-Smirnov Test Statistic	0.368	95% Percentile Bootstrap UCL	0.0015
Kolmogorov-Smirnov 5% Critical Value	0.181	95% BCA Bootstrap UCL	0.0021
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0027
		97.5% Chebyshev(Mean, Sd) UCL	0.0036
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0055
95% Approximate Gamma UCL	0.0011		
95% Adjusted Gamma UCL	0.0011		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0055

Result or 1/2 SDL (hexachlorobiphenyl (128))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	21
Raw Statistics		Log-transformed Statistics	
Minimum	8.5500E-5	Minimum of Log Data	-9.367
Maximum	0.0083	Maximum of Log Data	-4.784
Mean	4.5378E-4	Mean of log Data	-8.867
Median	9.6000E-5	SD of log Data	0.978
SD	0.0015		
Coefficient of Variation	3.498		
Skewness	5.123		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.243	Shapiro Wilk Test Statistic	0.519
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.7482E-4	95% H-UCL	3.6365E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.2833E-4
95% Adjusted-CLT UCL	0.0012	97.5% Chebyshev (MVUE) UCL	5.1775E-4
95% Modified-t UCL	0.0010	99% Chebyshev (MVUE) UCL	6.9340E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.502	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9.0347E-4		

Anderson-Darling Test Statistic	6.365	95% Bootstrap-t UCL	0.0502
Anderson-Darling 5% Critical Value	0.841	95% Hall's Bootstrap UCL	0.0307
Kolmogorov-Smirnov Test Statistic	0.346	95% Percentile Bootstrap UCL	0.0051
Kolmogorov-Smirnov 5% Critical Value	0.181	95% BCA Bootstrap UCL	0.0067
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0088
		97.5% Chebyshev(Mean, Sd) UCL	0.0119
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0177
95% Approximate Gamma UCL	0.0037		
95% Adjusted Gamma UCL	0.0038		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0177

Result or 1/2 SDL (hexachlorobiphenyl (153))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	20
Raw Statistics		Log-transformed Statistics	
Minimum	6.2500E-5	Minimum of Log Data	-9.68
Maximum	0.0501	Maximum of Log Data	-2.994
Mean	0.0026	Mean of log Data	-8.616
Median	7.0500E-5	SD of log Data	1.726
SD	0.0099		
Coefficient of Variation	3.801		
Skewness	4.646		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.287	Shapiro Wilk Test Statistic	0.653
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0058	95% H-UCL	0.0026
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0020
95% Adjusted-CLT UCL	0.0075	97.5% Chebyshev (MVUE) UCL	0.0026
95% Modified-t UCL	0.0061	99% Chebyshev (MVUE) UCL	0.0037
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.259	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.01		
nu star	14.01		
Approximate Chi Square Value (.05)	6.579	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0057
Adjusted Chi Square Value	6.254	95% Jackknife UCL	0.0058
		95% Standard Bootstrap UCL	0.0056
Anderson-Darling Test Statistic	6.082	95% Bootstrap-t UCL	0.0897
Anderson-Darling 5% Critical Value	0.868	95% Hall's Bootstrap UCL	0.0577
Kolmogorov-Smirnov Test Statistic	0.36	95% Percentile Bootstrap UCL	0.0063
Kolmogorov-Smirnov 5% Critical Value	0.184	95% BCA Bootstrap UCL	0.0093
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0109

Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		0.0013
Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		136
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0071		Minimum of Log Data	-4.948
	Maximum	6.49		Maximum of Log Data	1.87
	Mean	0.368		Mean of log Data	-2.635
	Median	0.0845		SD of log Data	1.884
	SD	0.812			
	Coefficient of Variation	2.21			
	Skewness	4.251			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.335		Lilliefors Test Statistic	0.202
	Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.472		95% H-UCL	0.661
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.824
	95% Adjusted-CLT UCL	0.494		97.5% Chebyshev (MVUE) UCL	1.003
	95% Modified-t UCL	0.475		99% Chebyshev (MVUE) UCL	1.355
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.399	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.921			
	nu star	132.4			
	Approximate Chi Square Value (.05)	106.9	Nonparametric Statistics		
	Adjusted Level of Significance	0.0486		95% CLT UCL	0.471
	Adjusted Chi Square Value	106.7		95% Jackknife UCL	0.472
				95% Standard Bootstrap UCL	0.474
	Anderson-Darling Test Statistic	9.141		95% Bootstrap-t UCL	0.514
	Anderson-Darling 5% Critical Value	0.844		95% Hall's Bootstrap UCL	0.526
	Kolmogorov-Smirnov Test Statistic	0.183		95% Percentile Bootstrap UCL	0.476
	Kolmogorov-Smirnov 5% Critical Value	0.0776		95% BCA Bootstrap UCL	0.493
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.642
				97.5% Chebyshev(Mean, Sd) UCL	0.761
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.995
	95% Approximate Gamma UCL	0.456			
	95% Adjusted Gamma UCL	0.456			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.761
Result or 1/2 SDL (iron)					

General Statistics					
Number of Valid Samples		166	Number of Unique Samples		125
Raw Statistics			Log-transformed Statistics		
Minimum		2410	Minimum of Log Data		7.787
Maximum		77100	Maximum of Log Data		11.25
Mean		14277	Mean of log Data		9.418
Median		12400	SD of log Data		0.533
SD		9389			
Coefficient of Variation		0.658			
Skewness		3.268			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.205	Lilliefors Test Statistic		0.0905
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		15482	95% H-UCL		15314
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		16907
95% Adjusted-CLT UCL		15673	97.5% Chebyshev (MVUE) UCL		18087
95% Modified-t UCL		15513	99% Chebyshev (MVUE) UCL		20403
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		3.478	Data do not follow a Discernable Distribution (0.05)		
Theta Star		4105			
nu star		1155			
Approximate Chi Square Value (.05)		1077	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		15475
Adjusted Chi Square Value		1076	95% Jackknife UCL		15482
			95% Standard Bootstrap UCL		15452
Anderson-Darling Test Statistic		3.183	95% Bootstrap-t UCL		15756
Anderson-Darling 5% Critical Value		0.758	95% Hall's Bootstrap UCL		15776
Kolmogorov-Smirnov Test Statistic		0.127	95% Percentile Bootstrap UCL		15528
Kolmogorov-Smirnov 5% Critical Value		0.0728	95% BCA Bootstrap UCL		15729
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		17453
			97.5% Chebyshev(Mean, Sd) UCL		18828
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		21528
95% Approximate Gamma UCL		15309			
95% Adjusted Gamma UCL		15319			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		17453

Result or 1/2 SDL (isopropylbenzene (cumene))

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		64
Raw Statistics			Log-transformed Statistics		
Minimum		3.5000E-5	Minimum of Log Data		-10.26

Maximum	64.9	Maximum of Log Data	4.173
Mean	0.831	Mean of log Data	-8.404
Median	7.2000E-5	SD of log Data	2.525
SD	7.13		
Coefficient of Variation	8.582		
Skewness	9.065		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.514	Lilliefors Test Statistic	0.367
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.133	95% H-UCL	0.0167
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0143
95% Adjusted-CLT UCL	2.95	97.5% Chebyshev (MVUE) UCL	0.0185
95% Modified-t UCL	2.263	99% Chebyshev (MVUE) UCL	0.0267
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.103	Data do not follow a Discernable Distribution (0.05)	
Theta Star	8.035		
nu star	17.17		
Approximate Chi Square Value (.05)	8.79	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	2.118
Adjusted Chi Square Value	8.684	95% Jackknife UCL	2.133
		95% Standard Bootstrap UCL	2.092
Anderson-Darling Test Statistic	26.04	95% Bootstrap-t UCL	375
Anderson-Darling 5% Critical Value	1.026	95% Hall's Bootstrap UCL	363.5
Kolmogorov-Smirnov Test Statistic	0.415	95% Percentile Bootstrap UCL	2.393
Kolmogorov-Smirnov 5% Critical Value	0.113	95% BCA Bootstrap UCL	3.957
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.242
		97.5% Chebyshev(Mean, Sd) UCL	5.719
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.618
95% Approximate Gamma UCL	1.622		
95% Adjusted Gamma UCL	1.642		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	8.618

Result or 1/2 SDL (lead)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	145
Raw Statistics		Log-transformed Statistics	
Minimum	2.48	Minimum of Log Data	0.908
Maximum	702	Maximum of Log Data	6.554
Mean	53.52	Mean of log Data	3.186
Median	17.1	SD of log Data	1.12
SD	104.2		
Coefficient of Variation	1.947		

Skewness		4.276		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.312		Lilliefors Test Statistic	0.138
Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	66.9		95% H-UCL	55.13
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	66.37
95% Adjusted-CLT UCL	69.69		97.5% Chebyshev (MVUE) UCL	75.62
95% Modified-t UCL	67.35		99% Chebyshev (MVUE) UCL	93.79
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.744		Data do not follow a Discernable Distribution (0.05)	
Theta Star	71.97			
nu star	246.9			
Approximate Chi Square Value (.05)	211.5		Nonparametric Statistics	
Adjusted Level of Significance	0.0486		95% CLT UCL	66.82
Adjusted Chi Square Value	211.2		95% Jackknife UCL	66.9
			95% Standard Bootstrap UCL	66.45
Anderson-Darling Test Statistic	10.55		95% Bootstrap-t UCL	72.98
Anderson-Darling 5% Critical Value	0.796		95% Hall's Bootstrap UCL	69.81
Kolmogorov-Smirnov Test Statistic	0.191		95% Percentile Bootstrap UCL	67.23
Kolmogorov-Smirnov 5% Critical Value	0.0753		95% BCA Bootstrap UCL	70.24
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	88.78
			97.5% Chebyshev(Mean, Sd) UCL	104
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	134
95% Approximate Gamma UCL	62.47			
95% Adjusted Gamma UCL	62.56			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	104
Result or 1/2 SDL (lithium)				
General Statistics				
Number of Valid Samples	166		Number of Unique Samples	145
Raw Statistics			Log-transformed Statistics	
Minimum	0.65		Minimum of Log Data	-0.431
Maximum	28.6		Maximum of Log Data	3.353
Mean	10.03		Mean of log Data	2.054
Median	9.02		SD of log Data	0.791
SD	6.299			
Coefficient of Variation	0.628			
Skewness	0.63			
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Lilliefors Test Statistic	0.101		Lilliefors Test Statistic	0.092

Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		10.84	95% H-UCL		12.06
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		13.87
95% Adjusted-CLT UCL		10.86	97.5% Chebyshev (MVUE) UCL		15.27
95% Modified-t UCL		10.85	99% Chebyshev (MVUE) UCL		18.02
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		2.103	Data do not follow a Discernable Distribution (0.05)		
Theta Star		4.77			
nu star		698.3			
Approximate Chi Square Value (.05)		638	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		10.84
Adjusted Chi Square Value		637.5	95% Jackknife UCL		10.84
			95% Standard Bootstrap UCL		10.82
Anderson-Darling Test Statistic		1.059	95% Bootstrap-t UCL		10.91
Anderson-Darling 5% Critical Value		0.765	95% Hall's Bootstrap UCL		10.87
Kolmogorov-Smirnov Test Statistic		0.0795	95% Percentile Bootstrap UCL		10.86
Kolmogorov-Smirnov 5% Critical Value		0.0733	95% BCA Bootstrap UCL		10.85
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		12.17
			97.5% Chebyshev(Mean, Sd) UCL		13.09
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		14.9
95% Approximate Gamma UCL		10.98			
95% Adjusted Gamma UCL		10.99			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		12.17

Result or 1/2 SDL (m,p-xylene)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		81
Raw Statistics			Log-transformed Statistics		
Minimum		9.1000E-5	Minimum of Log Data		-9.305
Maximum		2.56	Maximum of Log Data		0.94
Mean		0.0347	Mean of log Data		-6.851
Median		0.0011	SD of log Data		1.646
SD		0.281			
Coefficient of Variation		8.104			
Skewness		9.073			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.485	Lilliefors Test Statistic		0.175
Lilliefors Critical Value		0.0973	Lilliefors Critical Value		0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.086	95% H-UCL		0.0069

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0083
95% Adjusted-CLT UCL	0.118	97.5% Chebyshev (MVUE) UCL		0.0103
95% Modified-t UCL	0.0911	99% Chebyshev (MVUE) UCL		0.0141
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.21	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.165			
nu star	34.84			
Approximate Chi Square Value (.05)	22.34	Nonparametric Statistics		
Adjusted Level of Significance	0.0471	95% CLT UCL		0.0854
Adjusted Chi Square Value	22.16	95% Jackknife UCL		0.086
		95% Standard Bootstrap UCL		0.0857
Anderson-Darling Test Statistic	18.54	95% Bootstrap-t UCL		2.137
Anderson-Darling 5% Critical Value	0.906	95% Hall's Bootstrap UCL		1.249
Kolmogorov-Smirnov Test Statistic	0.41	95% Percentile Bootstrap UCL		0.0961
Kolmogorov-Smirnov 5% Critical Value	0.108	95% BCA Bootstrap UCL		0.156
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.169
		97.5% Chebyshev(Mean, Sd) UCL		0.227
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.342
95% Approximate Gamma UCL	0.0541			
95% Adjusted Gamma UCL	0.0545			
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL		0.227

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	133
Raw Statistics		Log-transformed Statistics	
Minimum	59.3	Minimum of Log Data	4.083
Maximum	892	Maximum of Log Data	6.793
Mean	261.2	Mean of log Data	5.47
Median	224.5	SD of log Data	0.429
SD	127.4		
Coefficient of Variation	0.488		
Skewness	2.072		

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.146	Lilliefors Test Statistic		0.0718
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		277.5	95% H-UCL		276.1
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		299.4
95% Adjusted-CLT UCL		279.2	97.5% Chebyshev (MVUE) UCL		316.4
95% Modified-t UCL		277.8	99% Chebyshev (MVUE) UCL		349.9
Gamma Distribution Test			Data Distribution		

k star (bias corrected)	5.314	Data do not follow a Discernable Distribution (0.05)	
Theta Star	49.15		
nu star	1764		
Approximate Chi Square Value (.05)	1668	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	277.5
Adjusted Chi Square Value	1667	95% Jackknife UCL	277.5
		95% Standard Bootstrap UCL	277.3
Anderson-Darling Test Statistic	2.43	95% Bootstrap-t UCL	279
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	280.1
Kolmogorov-Smirnov Test Statistic	0.0858	95% Percentile Bootstrap UCL	278.6
Kolmogorov-Smirnov 5% Critical Value	0.0725	95% BCA Bootstrap UCL	278.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	304.3
		97.5% Chebyshev(Mean, Sd) UCL	323
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	359.6
95% Approximate Gamma UCL	276.3		
95% Adjusted Gamma UCL	276.4		
Potential UCL to Use		Use 95% Student's-t UCL	277.5
		or 95% Modified-t UCL	277.8

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	166	Number of Unique Samples	94
Raw Statistics		Log-transformed Statistics	
Minimum	0.001	Minimum of Log Data	-6.908
Maximum	0.85	Maximum of Log Data	-0.163
Mean	0.0262	Mean of log Data	-4.969
Median	0.0068	SD of log Data	1.332
SD	0.0941		
Coefficient of Variation	3.59		
Skewness	6.891		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.394	Lilliefors Test Statistic	0.0972
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0383	95% H-UCL	0.0218
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0268
95% Adjusted-CLT UCL	0.0424	97.5% Chebyshev (MVUE) UCL	0.0312
95% Modified-t UCL	0.0389	99% Chebyshev (MVUE) UCL	0.0398
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.477	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.055		
nu star	158.3		
Approximate Chi Square Value (.05)	130.2	Nonparametric Statistics	

Adjusted Level of Significance	0.0486	95% CLT UCL	0.0382
Adjusted Chi Square Value	130	95% Jackknife UCL	0.0383
		95% Standard Bootstrap UCL	0.0378
Anderson-Darling Test Statistic	14.93	95% Bootstrap-t UCL	0.0543
Anderson-Darling 5% Critical Value	0.825	95% Hall's Bootstrap UCL	0.0842
Kolmogorov-Smirnov Test Statistic	0.234	95% Percentile Bootstrap UCL	0.0396
Kolmogorov-Smirnov 5% Critical Value	0.0768	95% BCA Bootstrap UCL	0.0435
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.058
		97.5% Chebyshev(Mean, Sd) UCL	0.0718
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0988
95% Approximate Gamma UCL	0.0319		
95% Adjusted Gamma UCL	0.0319		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0718

Result or 1/2 SDL (methylcyclohexane)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	77
Raw Statistics		Log-transformed Statistics	
Minimum	1.3750E-4	Minimum of Log Data	-8.892
Maximum	2.73	Maximum of Log Data	1.004
Mean	0.0369	Mean of log Data	-6.534
Median	0.0019	SD of log Data	1.611
SD	0.299		
Coefficient of Variation	8.123		
Skewness	9.089		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.494	Lilliefors Test Statistic	0.199
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0915	95% H-UCL	0.0088
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0108
95% Adjusted-CLT UCL	0.126	97.5% Chebyshev (MVUE) UCL	0.0132
95% Modified-t UCL	0.097	99% Chebyshev (MVUE) UCL	0.0179
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.224	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.165		
nu star	37.11		
Approximate Chi Square Value (.05)	24.17	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0909
Adjusted Chi Square Value	23.98	95% Jackknife UCL	0.0915
		95% Standard Bootstrap UCL	0.0909
Anderson-Darling Test Statistic	18.27	95% Bootstrap-t UCL	1.459
Anderson-Darling 5% Critical Value	0.9	95% Hall's Bootstrap UCL	1.338

Kolmogorov-Smirnov Test Statistic		0.431	95% Percentile Bootstrap UCL		0.102
Kolmogorov-Smirnov 5% Critical Value		0.108	95% BCA Bootstrap UCL		0.168
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.18
			97.5% Chebyshev(Mean, Sd) UCL		0.242
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.364
95% Approximate Gamma UCL		0.0566			
95% Adjusted Gamma UCL		0.057			
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL		0.242
Result or 1/2 SDL (molybdenum)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		102
Raw Statistics			Log-transformed Statistics		
Minimum		0.034	Minimum of Log Data		-3.381
Maximum		10.4	Maximum of Log Data		2.342
Mean		0.89	Mean of log Data		-1.228
Median		0.305	SD of log Data		1.597
SD		1.488			
Coefficient of Variation		1.671			
Skewness		3.38			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Lilliefors Test Statistic		0.282	Lilliefors Test Statistic		0.164
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		1.081	95% H-UCL		1.474
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		1.842
95% Adjusted-CLT UCL		1.113	97.5% Chebyshev (MVUE) UCL		2.192
95% Modified-t UCL		1.086	99% Chebyshev (MVUE) UCL		2.881
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.555	Data do not follow a Discernable Distribution (0.05)		
Theta Star		1.604			
nu star		184.3			
Approximate Chi Square Value (.05)		153.9	Nonparametric Statistics		
Adjusted Level of Significance		0.0486	95% CLT UCL		1.08
Adjusted Chi Square Value		153.7	95% Jackknife UCL		1.081
			95% Standard Bootstrap UCL		1.082
Anderson-Darling Test Statistic		4.333	95% Bootstrap-t UCL		1.129
Anderson-Darling 5% Critical Value		0.814	95% Hall's Bootstrap UCL		1.133
Kolmogorov-Smirnov Test Statistic		0.131	95% Percentile Bootstrap UCL		1.094
Kolmogorov-Smirnov 5% Critical Value		0.0763	95% BCA Bootstrap UCL		1.13
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.394
			97.5% Chebyshev(Mean, Sd) UCL		1.611
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		2.039

95% Approximate Gamma UCL		1.066		
95% Adjusted Gamma UCL		1.068		
Potential UCL to Use			Use 97.5% Chebyshev (Mean, Sd) UCL	1.611
Result or 1/2 SDL (naphthalene)				
General Statistics				
Number of Valid Samples		83	Number of Unique Samples	79
Raw Statistics			Log-transformed Statistics	
	Minimum	1.3600E-4	Minimum of Log Data	-8.903
	Maximum	19.2	Maximum of Log Data	2.955
	Mean	0.323	Mean of log Data	-6.969
	Median	0.0013	SD of log Data	2.216
	SD	2.245		
	Coefficient of Variation	6.94		
	Skewness	7.803		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Lilliefors Test Statistic	0.511	Lilliefors Test Statistic	0.208
	Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	0.733	95% H-UCL	0.0266
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0271
	95% Adjusted-CLT UCL	0.954	97.5% Chebyshev (MVUE) UCL	0.0345
	95% Modified-t UCL	0.768	99% Chebyshev (MVUE) UCL	0.049
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	0.137	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	2.362		
	nu star	22.74		
Approximate Chi Square Value (.05)		12.89	Nonparametric Statistics	
	Adjusted Level of Significance	0.0471	95% CLT UCL	0.729
	Adjusted Chi Square Value	12.76	95% Jackknife UCL	0.733
			95% Standard Bootstrap UCL	0.735
	Anderson-Darling Test Statistic	21.77	95% Bootstrap-t UCL	52.02
	Anderson-Darling 5% Critical Value	0.973	95% Hall's Bootstrap UCL	53.32
	Kolmogorov-Smirnov Test Statistic	0.411	95% Percentile Bootstrap UCL	0.785
	Kolmogorov-Smirnov 5% Critical Value	0.111	95% BCA Bootstrap UCL	1.047
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	1.397
			97.5% Chebyshev(Mean, Sd) UCL	1.862
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	2.775
	95% Approximate Gamma UCL	0.57		
	95% Adjusted Gamma UCL	0.576		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	2.775

Result or 1/2 SDL (nickel)			
General Statistics			
Number of Valid Samples	166	Number of Unique Samples	120
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	36.7	Maximum of Log Data	3.603
Mean	11.74	Mean of log Data	2.374
Median	11.65	SD of log Data	0.441
SD	4.874		
Coefficient of Variation	0.415		
Skewness	1.176		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.0957	Lilliefors Test Statistic	0.107
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	12.37	95% H-UCL	12.58
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	13.68
95% Adjusted-CLT UCL	12.4	97.5% Chebyshev (MVUE) UCL	14.47
95% Modified-t UCL	12.37	99% Chebyshev (MVUE) UCL	16.04
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.687	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.064		
nu star	1888		
Approximate Chi Square Value (.05)	1788	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	12.36
Adjusted Chi Square Value	1787	95% Jackknife UCL	12.37
		95% Standard Bootstrap UCL	12.37
Anderson-Darling Test Statistic	1.205	95% Bootstrap-t UCL	12.42
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	12.45
Kolmogorov-Smirnov Test Statistic	0.0793	95% Percentile Bootstrap UCL	12.38
Kolmogorov-Smirnov 5% Critical Value	0.0725	95% BCA Bootstrap UCL	12.42
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.39
		97.5% Chebyshev(Mean, Sd) UCL	14.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	15.5
95% Approximate Gamma UCL	12.4		
95% Adjusted Gamma UCL	12.4		
Potential UCL to Use		Use 95% Student's-t UCL	12.37
		or 95% Modified-t UCL	12.37

Result or 1/2 SDL (nonachlorobiphenyl (206))

General Statistics

Number of Valid Samples		27	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum	5.6500E-5		Minimum of Log Data	-9.781	
Maximum	0.0048		Maximum of Log Data	-5.335	
Mean	3.0406E-4		Mean of log Data	-9.327	
Median	6.3000E-5		SD of log Data	1.068	
SD	9.3907E-4				
Coefficient of Variation	3.088				
Skewness	4.659				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.294		Shapiro Wilk Test Statistic	0.423	
Shapiro Wilk Critical Value	0.923		Shapiro Wilk Critical Value	0.923	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	6.1230E-4		95% H-UCL	2.6973E-4	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	3.1099E-4	
95% Adjusted-CLT UCL	7.7447E-4		97.5% Chebyshev (MVUE) UCL	3.7949E-4	
95% Modified-t UCL	6.3931E-4		99% Chebyshev (MVUE) UCL	5.1405E-4	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	0.482		Data do not follow a Discernable Distribution (0.05)		
Theta Star	6.3045E-4				
nu star	26.04				
Approximate Chi Square Value (.05)	15.41		Nonparametric Statistics		
Adjusted Level of Significance	0.0401		95% CLT UCL	6.0132E-4	
Adjusted Chi Square Value	14.89		95% Jackknife UCL	6.1230E-4	
			95% Standard Bootstrap UCL	5.9026E-4	
Anderson-Darling Test Statistic	8.142		95% Bootstrap-t UCL	0.0025	
Anderson-Darling 5% Critical Value	0.806		95% Hall's Bootstrap UCL	0.0027	
Kolmogorov-Smirnov Test Statistic	0.527		95% Percentile Bootstrap UCL	6.4078E-4	
Kolmogorov-Smirnov 5% Critical Value	0.178		95% BCA Bootstrap UCL	9.0915E-4	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0010	
			97.5% Chebyshev(Mean, Sd) UCL	0.0014	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0021	
95% Approximate Gamma UCL	5.1377E-4				
95% Adjusted Gamma UCL	5.3182E-4				
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		

Result or 1/2 SDL (n-propylbenzene)

General Statistics					
Number of Valid Samples		83	Number of Unique Samples		57
Raw Statistics			Log-transformed Statistics		
Minimum	3.2000E-5		Minimum of Log Data	-10.35	
Maximum	1.8		Maximum of Log Data	0.588	

Mean	0.0237	Mean of log Data	-8.883
Median	6.6000E-5	SD of log Data	1.815
SD	0.198		
Coefficient of Variation	8.331		
Skewness	9.058		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.503	Lilliefors Test Statistic	0.353
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0598	95% H-UCL	0.0013
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0015
95% Adjusted-CLT UCL	0.0825	97.5% Chebyshev (MVUE) UCL	0.0019
95% Modified-t UCL	0.0634	99% Chebyshev (MVUE) UCL	0.0027
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.152	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.156		
nu star	25.26		
Approximate Chi Square Value (.05)	14.81	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0594
Adjusted Chi Square Value	14.67	95% Jackknife UCL	0.0598
		95% Standard Bootstrap UCL	0.0596
Anderson-Darling Test Statistic	25.64	95% Bootstrap-t UCL	1.155
Anderson-Darling 5% Critical Value	0.958	95% Hall's Bootstrap UCL	1.125
Kolmogorov-Smirnov Test Statistic	0.434	95% Percentile Bootstrap UCL	0.0671
Kolmogorov-Smirnov 5% Critical Value	0.111	95% BCA Bootstrap UCL	0.11
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.118
		97.5% Chebyshev(Mean, Sd) UCL	0.159
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.24
95% Approximate Gamma UCL	0.0405		
95% Adjusted Gamma UCL	0.0409		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.159

Result or 1/2 SDL (o-xylene)

General Statistics

Number of Valid Samples	83	Number of Unique Samples	71
Raw Statistics		Log-transformed Statistics	
Minimum	4.0000E-5	Minimum of Log Data	-10.13
Maximum	0.84	Maximum of Log Data	-0.174
Mean	0.0132	Mean of log Data	-8.136
Median	9.5000E-5	SD of log Data	1.904
SD	0.0931		
Coefficient of Variation	7.053		
Skewness	8.784		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.476	Lilliefors Test Statistic	0.243
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0302	95% H-UCL	0.0035
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0040
95% Adjusted-CLT UCL	0.0405	97.5% Chebyshev (MVUE) UCL	0.0050
95% Modified-t UCL	0.0318	99% Chebyshev (MVUE) UCL	0.0070
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.195	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0676		
nu star	32.4		
Approximate Chi Square Value (.05)	20.39	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.03
Adjusted Chi Square Value	20.22	95% Jackknife UCL	0.0302
		95% Standard Bootstrap UCL	0.03
Anderson-Darling Test Statistic	18.03	95% Bootstrap-t UCL	0.241
Anderson-Darling 5% Critical Value	0.916	95% Hall's Bootstrap UCL	0.239
Kolmogorov-Smirnov Test Statistic	0.354	95% Percentile Bootstrap UCL	0.0331
Kolmogorov-Smirnov 5% Critical Value	0.109	95% BCA Bootstrap UCL	0.0461
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0577
		97.5% Chebyshev(Mean, Sd) UCL	0.077
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.115
95% Approximate Gamma UCL	0.021		
95% Adjusted Gamma UCL	0.0211		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.077

Result or 1/2 SDL (pentachlorobiphenyl (101))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	22
Raw Statistics		Log-transformed Statistics	
Minimum	9.8500E-5	Minimum of Log Data	-9.225
Maximum	0.0445	Maximum of Log Data	-3.112
Mean	0.0024	Mean of log Data	-8.262
Median	1.0650E-4	SD of log Data	1.554
SD	0.0088		
Coefficient of Variation	3.661		
Skewness	4.618		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk Test Statistic	0.664
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0052		95% H-UCL		0.0023	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0020	
95% Adjusted-CLT UCL		0.0068		97.5% Chebyshev (MVUE) UCL		0.0026	
95% Modified-t UCL		0.0055		99% Chebyshev (MVUE) UCL		0.0037	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.298		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0080					
nu star		16.11					
Approximate Chi Square Value (.05)		8.038		Nonparametric Statistics			
Adjusted Level of Significance		0.0401		95% CLT UCL		0.0051	
Adjusted Chi Square Value		7.674		95% Jackknife UCL		0.0052	
				95% Standard Bootstrap UCL		0.0051	
Anderson-Darling Test Statistic		5.88		95% Bootstrap-t UCL		0.0709	
Anderson-Darling 5% Critical Value		0.851		95% Hall's Bootstrap UCL		0.0384	
Kolmogorov-Smirnov Test Statistic		0.348		95% Percentile Bootstrap UCL		0.0054	
Kolmogorov-Smirnov 5% Critical Value		0.183		95% BCA Bootstrap UCL		0.0078	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0097	
				97.5% Chebyshev(Mean, Sd) UCL		0.013	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0193	
95% Approximate Gamma UCL		0.0048					
95% Adjusted Gamma UCL		0.0050					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.0193	

Result or 1/2 SDL (pentachlorobiphenyl (105))

General Statistics			
Number of Valid Samples		27	Number of Unique Samples
			20
Raw Statistics		Log-transformed Statistics	
Minimum	8.5500E-5	Minimum of Log Data	-9.367
Maximum	0.0149	Maximum of Log Data	-4.206
Mean	6.7935E-4	Mean of log Data	-8.953
Median	9.5000E-5	SD of log Data	1.063
SD	0.0028		
Coefficient of Variation	4.189		
Skewness	5.174		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		Shapiro Wilk Test Statistic	0.386
Shapiro Wilk Critical Value		Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	3.8825E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.4827E-4

95% Adjusted-CLT UCL	0.0021	97.5% Chebyshev (MVUE) UCL	5.4673E-4
95% Modified-t UCL	0.0017	99% Chebyshev (MVUE) UCL	7.4014E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.378	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0018		
nu star	20.4		
Approximate Chi Square Value (.05)	11.15	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0015
Adjusted Chi Square Value	10.71	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0015
Anderson-Darling Test Statistic	8.853	95% Bootstrap-t UCL	0.0351
Anderson-Darling 5% Critical Value	0.831	95% Hall's Bootstrap UCL	0.0349
Kolmogorov-Smirnov Test Statistic	0.522	95% Percentile Bootstrap UCL	0.0017
Kolmogorov-Smirnov 5% Critical Value	0.18	95% BCA Bootstrap UCL	0.0028
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0030
		97.5% Chebyshev(Mean, Sd) UCL	0.0041
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0061
95% Approximate Gamma UCL	0.0012		
95% Adjusted Gamma UCL	0.0012		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0061

Result or 1/2 SDL (pentachlorobiphenyl (118))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	24
Raw Statistics		Log-transformed Statistics	
Minimum	1.4100E-4	Minimum of Log Data	-8.867
Maximum	0.0363	Maximum of Log Data	-3.316
Mean	0.0016	Mean of log Data	-8.275
Median	1.5900E-4	SD of log Data	1.154
SD	0.0069		
Coefficient of Variation	4.326		
Skewness	5.184		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.218	Shapiro Wilk Test Statistic	0.526
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0038	95% H-UCL	9.1008E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0010
95% Adjusted-CLT UCL	0.0052	97.5% Chebyshev (MVUE) UCL	0.0012
95% Modified-t UCL	0.0041	99% Chebyshev (MVUE) UCL	0.0017
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.348	Data do not follow a Discernable Distribution (0.05)	

Theta Star	0.0046		
nu star	18.77		
Approximate Chi Square Value (.05)	9.953	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0038
Adjusted Chi Square Value	9.542	95% Jackknife UCL	0.0038
		95% Standard Bootstrap UCL	0.0037
Anderson-Darling Test Statistic	7.604	95% Bootstrap-t UCL	0.0662
Anderson-Darling 5% Critical Value	0.839	95% Hall's Bootstrap UCL	0.0422
Kolmogorov-Smirnov Test Statistic	0.401	95% Percentile Bootstrap UCL	0.0042
Kolmogorov-Smirnov 5% Critical Value	0.181	95% BCA Bootstrap UCL	0.0068
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0074
		97.5% Chebyshev(Mean, Sd) UCL	0.0099
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0149
95% Approximate Gamma UCL	0.0030		
95% Adjusted Gamma UCL	0.0031		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0149

Result or 1/2 SDL (pentachlorobiphenyl (87))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	23
Raw Statistics		Log-transformed Statistics	
Minimum	1.1750E-4	Minimum of Log Data	-9.049
Maximum	0.0257	Maximum of Log Data	-3.661
Mean	0.0014	Mean of log Data	-8.363
Median	1.3200E-4	SD of log Data	1.31
SD	0.0050		
Coefficient of Variation	3.554		
Skewness	4.689		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.287	Shapiro Wilk Test Statistic	0.547
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0030	95% H-UCL	0.0011
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0012
95% Adjusted-CLT UCL	0.0039	97.5% Chebyshev (MVUE) UCL	0.0015
95% Modified-t UCL	0.0032	99% Chebyshev (MVUE) UCL	0.0021
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.353	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0040		
nu star	19.06		
Approximate Chi Square Value (.05)	10.16	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0030
Adjusted Chi Square Value	9.747	95% Jackknife UCL	0.0030

[illegible]

General Statistics

Raw Statistics		Log-transformed Statistics	
Minimum	0.0057	Minimum of Log Data	-5.159
Maximum	12.6	Maximum of Log Data	2.534
Mean	0.401	Mean of log Data	-3.001
Median	0.0421	SD of log Data	2.017
SD	1.228		
Coefficient of Variation	3.064		
Skewness	6.986		

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.374	Lilliefors Test Statistic	0.185
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.559	95% H-UCL	0.628
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.776
95% Adjusted-CLT UCL	0.613	97.5% Chebyshev (MVUE) UCL	0.954
95% Modified-t UCL	0.567	99% Chebyshev (MVUE) UCL	1.302

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.324	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.237		
nu star	107.6		
Approximate Chi Square Value (.05)	84.65	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.558
Adjusted Chi Square Value	84.47	95% Jackknife UCL	0.559
		95% Standard Bootstrap UCL	0.56
Anderson-Darling Test Statistic	12.32	95% Bootstrap-t UCL	0.677
Anderson-Darling 5% Critical Value	0.862	95% Hall's Bootstrap UCL	1.18
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.578
Kolmogorov-Smirnov 5% Critical Value	0.0784	95% BCA Bootstrap UCL	0.651

k star (bias corrected)	0.324	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.237		
nu star	107.6		
Approximate Chi Square Value (.05)	84.65	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	0.558
Adjusted Chi Square Value	84.47	95% Jackknife UCL	0.559
		95% Standard Bootstrap UCL	0.56
Anderson-Darling Test Statistic	12.32	95% Bootstrap-t UCL	0.677
Anderson-Darling 5% Critical Value	0.862	95% Hall's Bootstrap UCL	1.18
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.578
Kolmogorov-Smirnov 5% Critical Value	0.0784	95% BCA Bootstrap UCL	0.651

Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.816
				97.5% Chebyshev(Mean, Sd) UCL		0.996
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		1.349
95% Approximate Gamma UCL		0.51				
95% Adjusted Gamma UCL		0.511				
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		1.349
Result or 1/2 SDL (pyrene)						
General Statistics						
Number of Valid Samples		166	Number of Unique Samples		134	
Raw Statistics			Log-transformed Statistics			
Minimum		0.0055	Minimum of Log Data		-5.194	
Maximum		8.47	Maximum of Log Data		2.137	
Mean		0.432	Mean of log Data		-2.891	
Median		0.0414	SD of log Data		2.024	
SD		1.11				
Coefficient of Variation		2.57				
Skewness		4.384				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Lilliefors Test Statistic		0.35	Lilliefors Test Statistic		0.128	
Lilliefors Critical Value		0.0688	Lilliefors Critical Value		0.0688	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		0.575	95% H-UCL		0.714	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.882	
95% Adjusted-CLT UCL		0.605	97.5% Chebyshev (MVUE) UCL		1.084	
95% Modified-t UCL		0.58	99% Chebyshev (MVUE) UCL		1.481	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.329	Data do not follow a Discernable Distribution (0.05)			
Theta Star		1.314				
nu star		109.2				
Approximate Chi Square Value (.05)		86.04	Nonparametric Statistics			
Adjusted Level of Significance		0.0486	95% CLT UCL		0.574	
Adjusted Chi Square Value		85.87	95% Jackknife UCL		0.575	
			95% Standard Bootstrap UCL		0.576	
Anderson-Darling Test Statistic		11.49	95% Bootstrap-t UCL		0.618	
Anderson-Darling 5% Critical Value		0.861	95% Hall's Bootstrap UCL		0.616	
Kolmogorov-Smirnov Test Statistic		0.186	95% Percentile Bootstrap UCL		0.575	
Kolmogorov-Smirnov 5% Critical Value		0.0783	95% BCA Bootstrap UCL		0.613	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.808	
			97.5% Chebyshev(Mean, Sd) UCL		0.97	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1.29	
95% Approximate Gamma UCL		0.548				
95% Adjusted Gamma UCL		0.549				

Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		1.29
Result or 1/2 SDL (selenium)					
General Statistics					
Number of Valid Samples		166	Number of Unique Samples		32
Raw Statistics			Log-transformed Statistics		
	Minimum	0.21		Minimum of Log Data	-1.561
	Maximum	1.13		Maximum of Log Data	0.122
	Mean	0.28		Mean of log Data	-1.319
	Median	0.25		SD of log Data	0.267
	SD	0.119			
	Coefficient of Variation	0.426			
	Skewness	4.859			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Lilliefors Test Statistic	0.378		Lilliefors Test Statistic	0.329
	Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.296		95% H-UCL	0.287
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.302
	95% Adjusted-CLT UCL	0.299		97.5% Chebyshev (MVUE) UCL	0.313
	95% Modified-t UCL	0.296		99% Chebyshev (MVUE) UCL	0.335
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	10.6	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.0265			
	nu star	3518			
	Approximate Chi Square Value (.05)	3381	Nonparametric Statistics		
	Adjusted Level of Significance	0.0486		95% CLT UCL	0.296
	Adjusted Chi Square Value	3380		95% Jackknife UCL	0.296
				95% Standard Bootstrap UCL	0.296
	Anderson-Darling Test Statistic	26.48		95% Bootstrap-t UCL	0.302
	Anderson-Darling 5% Critical Value	0.751		95% Hall's Bootstrap UCL	0.304
	Kolmogorov-Smirnov Test Statistic	0.351		95% Percentile Bootstrap UCL	0.297
	Kolmogorov-Smirnov 5% Critical Value	0.0723		95% BCA Bootstrap UCL	0.3
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.321
				97.5% Chebyshev(Mean, Sd) UCL	0.338
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.372
	95% Approximate Gamma UCL	0.292			
	95% Adjusted Gamma UCL	0.292			
Potential UCL to Use			Use 95% Student's-t UCL		0.296
			or 95% Modified-t UCL		0.296

Result or 1/2 SDL (silver)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	40
-------------------------	-----	--------------------------	----

Raw Statistics

Log-transformed Statistics

Minimum	0.0235	Minimum of Log Data	-3.751
Maximum	1.64	Maximum of Log Data	0.495
Mean	0.063	Mean of log Data	-3.356
Median	0.028	SD of log Data	0.716
SD	0.165		
Coefficient of Variation	2.624		
Skewness	7.044		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Lilliefors Test Statistic	0.441	Lilliefors Test Statistic	0.376
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

Assuming Lognormal Distribution

95% Student's-t UCL	0.0843	95% H-UCL	0.0502
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0571
95% Adjusted-CLT UCL	0.0916	97.5% Chebyshev (MVUE) UCL	0.0623
95% Modified-t UCL	0.0854	99% Chebyshev (MVUE) UCL	0.0726

Gamma Distribution Test

Data Distribution

k star (bias corrected)	0.964	Data do not follow a Discernable Distribution (0.05)
Theta Star	0.0654	
nu star	320.2	

Approximate Chi Square Value (.05)

Nonparametric Statistics

Adjusted Level of Significance	0.0486	95% CLT UCL	0.0841
Adjusted Chi Square Value	279.4	95% Jackknife UCL	0.0843
		95% Standard Bootstrap UCL	0.0843
Anderson-Darling Test Statistic	42.85	95% Bootstrap-t UCL	0.104
Anderson-Darling 5% Critical Value	0.785	95% Hall's Bootstrap UCL	0.11
Kolmogorov-Smirnov Test Statistic	0.424	95% Percentile Bootstrap UCL	0.0863
Kolmogorov-Smirnov 5% Critical Value	0.0746	95% BCA Bootstrap UCL	0.0949

Data not Gamma Distributed at 5% Significance Level

95% Chebyshev(Mean, Sd) UCL	0.119
97.5% Chebyshev(Mean, Sd) UCL	0.143
99% Chebyshev(Mean, Sd) UCL	0.191

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0721
95% Adjusted Gamma UCL	0.0722

Potential UCL to Use

Use 95% Chebyshev (Mean, Sd) UCL	0.119
----------------------------------	-------

Result or 1/2 SDL (strontium)

General Statistics

Number of Valid Samples	166	Number of Unique Samples	151
-------------------------	-----	--------------------------	-----

Raw Statistics				Log-transformed Statistics			
	Minimum	16.5		Minimum of Log Data	2.803		
	Maximum	591		Maximum of Log Data	6.382		
	Mean	75.61		Mean of log Data	4.107		
	Median	58.1		SD of log Data	0.59		
	SD	73.75					
	Coefficient of Variation	0.975					
	Skewness	4.41					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Lilliefors Test Statistic	0.27		Lilliefors Test Statistic	0.138		
	Lilliefors Critical Value	0.0688		Lilliefors Critical Value	0.0688		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	85.08		95% H-UCL	78.78		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	87.8		
	95% Adjusted-CLT UCL	87.12		97.5% Chebyshev (MVUE) UCL	94.53		
	95% Modified-t UCL	85.41		99% Chebyshev (MVUE) UCL	107.7		
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	2.405		Data do not follow a Discernable Distribution (0.05)			
	Theta Star	31.44					
	nu star	798.4					
	Approximate Chi Square Value (.05)	733.9		Nonparametric Statistics			
	Adjusted Level of Significance	0.0486		95% CLT UCL	85.03		
	Adjusted Chi Square Value	733.3		95% Jackknife UCL	85.08		
				95% Standard Bootstrap UCL	84.96		
	Anderson-Darling Test Statistic	7.98		95% Bootstrap-t UCL	88.74		
	Anderson-Darling 5% Critical Value	0.763		95% Hall's Bootstrap UCL	88.35		
	Kolmogorov-Smirnov Test Statistic	0.195		95% Percentile Bootstrap UCL	85.62		
	Kolmogorov-Smirnov 5% Critical Value	0.0732		95% BCA Bootstrap UCL	87.31		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	100.6		
				97.5% Chebyshev(Mean, Sd) UCL	111.4		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	132.6		
	95% Approximate Gamma UCL	82.27					
	95% Adjusted Gamma UCL	82.33					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	100.6		

Result or 1/2 SDL (tetrachlorobiphenyl (44))

General Statistics			
Number of Valid Samples	27	Number of Unique Samples	20
Raw Statistics		Log-transformed Statistics	
Minimum	6.3000E-5	Minimum of Log Data	-9.672
Maximum	0.0198	Maximum of Log Data	-3.922
Mean	9.3370E-4	Mean of log Data	-8.97
Median	7.0500E-5	SD of log Data	1.344

SD	0.0037	
Coefficient of Variation	4.064	
Skewness	5.095	

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.245	Shapiro Wilk Test Statistic	0.554
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0021	95% H-UCL	6.8092E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.0103E-4
95% Adjusted-CLT UCL	0.0029	97.5% Chebyshev (MVUE) UCL	8.7638E-4
95% Modified-t UCL	0.0023	99% Chebyshev (MVUE) UCL	0.0012
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.326	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0028		
nu star	17.61		
Approximate Chi Square Value (.05)	9.108	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	0.0021
Adjusted Chi Square Value	8.718	95% Jackknife UCL	0.0021
		95% Standard Bootstrap UCL	0.0021
Anderson-Darling Test Statistic	7.003	95% Bootstrap-t UCL	0.0254
Anderson-Darling 5% Critical Value	0.844	95% Hall's Bootstrap UCL	0.0165
Kolmogorov-Smirnov Test Statistic	0.445	95% Percentile Bootstrap UCL	0.0023
Kolmogorov-Smirnov 5% Critical Value	0.182	95% BCA Bootstrap UCL	0.0031
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0041
		97.5% Chebyshev(Mean, Sd) UCL	0.0054
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0082
95% Approximate Gamma UCL	0.0018		
95% Adjusted Gamma UCL	0.0018		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0082

Result or 1/2 SDL (tetrachlorobiphenyl (52))

General Statistics

Number of Valid Samples	27	Number of Unique Samples	24
Raw Statistics		Log-transformed Statistics	
Minimum	9.9500E-5	Minimum of Log Data	-9.215
Maximum	0.0336	Maximum of Log Data	-3.393
Mean	0.0017	Mean of log Data	-8.357
Median	1.1300E-4	SD of log Data	1.409
SD	0.0065		
Coefficient of Variation	3.771		
Skewness	4.868		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.274		Shapiro Wilk Test Statistic		0.632	
Shapiro Wilk Critical Value		0.923		Shapiro Wilk Critical Value		0.923	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0038		95% H-UCL		0.0014	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0014	
95% Adjusted-CLT UCL		0.0050		97.5% Chebyshev (MVUE) UCL		0.0018	
95% Modified-t UCL		0.0040		99% Chebyshev (MVUE) UCL		0.0025	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.326		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0053					
nu star		17.59					
Approximate Chi Square Value (.05)		9.095		Nonparametric Statistics			
Adjusted Level of Significance		0.0401		95% CLT UCL		0.0037	
Adjusted Chi Square Value		8.705		95% Jackknife UCL		0.0038	
				95% Standard Bootstrap UCL		0.0037	
Anderson-Darling Test Statistic		6.223		95% Bootstrap-t UCL		0.049	
Anderson-Darling 5% Critical Value		0.844		95% Hall's Bootstrap UCL		0.0272	
Kolmogorov-Smirnov Test Statistic		0.351		95% Percentile Bootstrap UCL		0.0041	
Kolmogorov-Smirnov 5% Critical Value		0.182		95% BCA Bootstrap UCL		0.0059	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0072	
				97.5% Chebyshev(Mean, Sd) UCL		0.0095	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0142	
95% Approximate Gamma UCL		0.0033					
95% Adjusted Gamma UCL		0.0034					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.0142	
Result or 1/2 SDL (tin)							
General Statistics							
Number of Valid Samples		166		Number of Unique Samples		57	
Raw Statistics				Log-transformed Statistics			
Minimum		0.23		Minimum of Log Data		-1.47	
Maximum		6.48		Maximum of Log Data		1.869	
Mean		0.616		Mean of log Data		-0.912	
Median		0.27		SD of log Data		0.764	
SD		0.868					
Coefficient of Variation		1.409					
Skewness		3.697					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.33		Lilliefors Test Statistic		0.34	
Lilliefors Critical Value		0.0688		Lilliefors Critical Value		0.0688	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.727		95% H-UCL		0.605	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.693	
95% Adjusted-CLT UCL		0.748		97.5% Chebyshev (MVUE) UCL		0.761	
95% Modified-t UCL		0.731		99% Chebyshev (MVUE) UCL		0.894	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.292		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.477					
nu star		428.9					
Approximate Chi Square Value (.05)		381.9		Nonparametric Statistics			
Adjusted Level of Significance		0.0486		95% CLT UCL		0.727	
Adjusted Chi Square Value		381.5		95% Jackknife UCL		0.727	
				95% Standard Bootstrap UCL		0.727	
Anderson-Darling Test Statistic		26.15		95% Bootstrap-t UCL		0.759	
Anderson-Darling 5% Critical Value		0.776		95% Hall's Bootstrap UCL		0.758	
Kolmogorov-Smirnov Test Statistic		0.352		95% Percentile Bootstrap UCL		0.73	
Kolmogorov-Smirnov 5% Critical Value		0.0741		95% BCA Bootstrap UCL		0.751	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.91	
				97.5% Chebyshev(Mean, Sd) UCL		1.037	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		1.286	
95% Approximate Gamma UCL		0.692					
95% Adjusted Gamma UCL		0.693					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.91	

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples		166	
Number of Unique Samples		114	
Raw Statistics		Log-transformed Statistics	
Minimum	4.02	Minimum of Log Data	1.391
Maximum	645	Maximum of Log Data	6.469
Mean	25.77	Mean of log Data	3.014
Median	19	SD of log Data	0.484
SD	50.15		
Coefficient of Variation	1.946		
Skewness	11.61		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.375	Lilliefors Test Statistic	0.177
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	24.52
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.84
95% Adjusted-CLT UCL		97.5% Chebyshev (MVUE) UCL	28.55
95% Modified-t UCL		99% Chebyshev (MVUE) UCL	31.91

Gamma Distribution Test				Data Distribution			
k star (bias corrected)		2.243		Data do not follow a Discernable Distribution (0.05)			
Theta Star		11.49					
nu star		744.8					
Approximate Chi Square Value (.05)		682.5		Nonparametric Statistics			
Adjusted Level of Significance		0.0486		95% CLT UCL		32.17	
Adjusted Chi Square Value		681.9		95% Jackknife UCL		32.21	
				95% Standard Bootstrap UCL		32.2	
Anderson-Darling Test Statistic		6.024E+28		95% Bootstrap-t UCL		48.92	
Anderson-Darling 5% Critical Value		0.764		95% Hall's Bootstrap UCL		55.9	
Kolmogorov-Smirnov Test Statistic		0.272		95% Percentile Bootstrap UCL		33.3	
Kolmogorov-Smirnov 5% Critical Value		0.0732		95% BCA Bootstrap UCL		37.62	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		42.74	
				97.5% Chebyshev(Mean, Sd) UCL		50.08	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		64.5	
95% Approximate Gamma UCL		28.13					
95% Adjusted Gamma UCL		28.15					
Potential UCL to Use				Use 95% Student's-t UCL		32.21	
				or 95% Modified-t UCL		32.8	
Result or 1/2 SDL (toluene)							
General Statistics							
Number of Valid Samples		83		Number of Unique Samples		80	
Raw Statistics				Log-transformed Statistics			
Minimum		2.6100E-4		Minimum of Log Data		-8.251	
Maximum		0.106		Maximum of Log Data		-2.249	
Mean		0.0057		Mean of log Data		-5.738	
Median		0.0036		SD of log Data		1.082	
SD		0.0117					
Coefficient of Variation		2.033					
Skewness		7.835					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Lilliefors Test Statistic		0.351		Lilliefors Test Statistic		0.143	
Lilliefors Critical Value		0.0973		Lilliefors Critical Value		0.0973	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0078		95% H-UCL		0.0076	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0093	
95% Adjusted-CLT UCL		0.0090		97.5% Chebyshev (MVUE) UCL		0.0109	
95% Modified-t UCL		0.0080		99% Chebyshev (MVUE) UCL		0.014	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.972		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0059					

nu star	161.4		
Approximate Chi Square Value (.05)	133	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0078
Adjusted Chi Square Value	132.5	95% Jackknife UCL	0.0078
		95% Standard Bootstrap UCL	0.0079
Anderson-Darling Test Statistic	2.348	95% Bootstrap-t UCL	0.0117
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	0.0159
Kolmogorov-Smirnov Test Statistic	0.184	95% Percentile Bootstrap UCL	0.0080
Kolmogorov-Smirnov 5% Critical Value	0.101	95% BCA Bootstrap UCL	0.0096
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0113
		97.5% Chebyshev(Mean, Sd) UCL	0.0137
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0185
95% Approximate Gamma UCL	0.0069		
95% Adjusted Gamma UCL	0.0069		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0137

Result or 1/2 SDL (total moisture)

General Statistics			
Number of Valid Samples	4	Number of Unique Samples	4
Raw Statistics		Log-transformed Statistics	
Minimum	4.47	Minimum of Log Data	1.497
Maximum	7.34	Maximum of Log Data	1.993
Mean	5.813	Mean of log Data	1.742
Median	5.72	SD of log Data	0.22
SD	1.274		
Coefficient of Variation	0.219		
Skewness	0.304		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.748	Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.312	95% H-UCL	8.384
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.589
95% Adjusted-CLT UCL	6.964	97.5% Chebyshev (MVUE) UCL	9.791
95% Modified-t UCL	7.328	99% Chebyshev (MVUE) UCL	12.15
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.11	Data appear Normal at 5% Significance Level	
Theta Star	0.817		
nu star	56.88		
Approximate Chi Square Value (.05)	40.55	Nonparametric Statistics	
Adjusted Level of Significance	N/A	95% CLT UCL	6.861
Adjusted Chi Square Value	N/A	95% Jackknife UCL	7.312
		95% Standard Bootstrap UCL	6.714

Anderson-Darling Test Statistic	0.239	95% Bootstrap-t UCL	9.165
Anderson-Darling 5% Critical Value	0.657	95% Hall's Bootstrap UCL	8.868
Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL	6.785
Kolmogorov-Smirnov 5% Critical Value	0.394	95% BCA Bootstrap UCL	6.575
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.59
		97.5% Chebyshev(Mean, Sd) UCL	9.792
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12.15
95% Approximate Gamma UCL	8.154		
95% Adjusted Gamma UCL	N/A		
Potential UCL to Use		Use 95% Student's-t UCL	7.312

Result or 1/2 SDL (trichloroethene)

General Statistics			
Number of Valid Samples	83	Number of Unique Samples	58
Raw Statistics		Log-transformed Statistics	
Minimum	4.0500E-5	Minimum of Log Data	-10.11
Maximum	0.034	Maximum of Log Data	-3.381
Mean	9.2984E-4	Mean of log Data	-8.979
Median	8.0500E-5	SD of log Data	1.34
SD	0.0039		
Coefficient of Variation	4.295		
Skewness	7.315		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.47	Lilliefors Test Statistic	0.421
Lilliefors Critical Value	0.0973	Lilliefors Critical Value	0.0973
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0016	95% H-UCL	4.5311E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.5915E-4
95% Adjusted-CLT UCL	0.0020	97.5% Chebyshev (MVUE) UCL	6.6982E-4
95% Modified-t UCL	0.0017	99% Chebyshev (MVUE) UCL	8.8721E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.334	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0027		
nu star	55.48		
Approximate Chi Square Value (.05)	39.36	Nonparametric Statistics	
Adjusted Level of Significance	0.0471	95% CLT UCL	0.0016
Adjusted Chi Square Value	39.12	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0016
Anderson-Darling Test Statistic	23.85	95% Bootstrap-t UCL	0.0031
Anderson-Darling 5% Critical Value	0.857	95% Hall's Bootstrap UCL	0.0041
Kolmogorov-Smirnov Test Statistic	0.492	95% Percentile Bootstrap UCL	0.0017
Kolmogorov-Smirnov 5% Critical Value	0.106	95% BCA Bootstrap UCL	0.0021
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0028

								97.5% Chebyshev(Mean, Sd) UCL				0.0036			
Assuming Gamma Distribution								99% Chebyshev(Mean, Sd) UCL				0.0052			
95% Approximate Gamma UCL				0.0013											
95% Adjusted Gamma UCL				0.0013											
Potential UCL to Use								Use 97.5% Chebyshev (Mean, Sd) UCL				0.0036			
Result or 1/2 SDL (vanadium)															
General Statistics															
Number of Valid Samples				166				Number of Unique Samples				117			
Raw Statistics								Log-transformed Statistics							
Minimum				4.73				Minimum of Log Data				1.554			
Maximum				45.6				Maximum of Log Data				3.82			
Mean				14.4				Mean of log Data				2.588			
Median				13.75				SD of log Data				0.406			
SD				5.905											
Coefficient of Variation				0.41											
Skewness				1.359											
Relevant UCL Statistics															
Normal Distribution Test								Lognormal Distribution Test							
Lilliefors Test Statistic				0.0803				Lilliefors Test Statistic				0.0508			
Lilliefors Critical Value				0.0688				Lilliefors Critical Value				0.0688			
Data not Normal at 5% Significance Level								Data appear Lognormal at 5% Significance Level							
Assuming Normal Distribution								Assuming Lognormal Distribution							
95% Student's-t UCL				15.16				95% H-UCL				15.27			
95% UCLs (Adjusted for Skewness)								95% Chebyshev (MVUE) UCL				16.5			
95% Adjusted-CLT UCL				15.21				97.5% Chebyshev (MVUE) UCL				17.39			
95% Modified-t UCL				15.17				99% Chebyshev (MVUE) UCL				19.14			
Gamma Distribution Test								Data Distribution							
k star (bias corrected)				6.31				Data appear Gamma Distributed at 5% Significance Level							
Theta Star				2.283											
nu star				2095											
Approximate Chi Square Value (.05)				1989				Nonparametric Statistics							
Adjusted Level of Significance				0.0486				95% CLT UCL				15.16			
Adjusted Chi Square Value				1989				95% Jackknife UCL				15.16			
								95% Standard Bootstrap UCL				15.16			
Anderson-Darling Test Statistic				0.304				95% Bootstrap-t UCL				15.19			
Anderson-Darling 5% Critical Value				0.754				95% Hall's Bootstrap UCL				15.26			
Kolmogorov-Smirnov Test Statistic				0.0346				95% Percentile Bootstrap UCL				15.16			
Kolmogorov-Smirnov 5% Critical Value				0.0725				95% BCA Bootstrap UCL				15.19			
Data appear Gamma Distributed at 5% Significance Level								95% Chebyshev(Mean, Sd) UCL				16.4			
								97.5% Chebyshev(Mean, Sd) UCL				17.27			
Assuming Gamma Distribution								99% Chebyshev(Mean, Sd) UCL				18.96			
95% Approximate Gamma UCL				15.17											
95% Adjusted Gamma UCL				15.17											

Potential UCL to Use				Use 95% Approximate Gamma UCL				15.17
Result or 1/2 SDL (xylene (total))								
General Statistics								
Number of Valid Samples			83	Number of Unique Samples			77	
Raw Statistics				Log-transformed Statistics				
		Minimum	1.3050E-4			Minimum of Log Data	-8.944	
		Maximum	3.4			Maximum of Log Data	1.224	
		Mean	0.0479			Mean of log Data	-6.555	
		Median	0.0014			SD of log Data	1.685	
		SD	0.374					
		Coefficient of Variation	7.807					
		Skewness	9.027					
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
		Lilliefors Test Statistic	0.472			Lilliefors Test Statistic	0.197	
		Lilliefors Critical Value	0.0973			Lilliefors Critical Value	0.0973	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
		95% Student's-t UCL	0.116			95% H-UCL	0.0102	
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	0.0122	
		95% Adjusted-CLT UCL	0.159			97.5% Chebyshev (MVUE) UCL	0.0151	
		95% Modified-t UCL	0.123			99% Chebyshev (MVUE) UCL	0.0207	
Gamma Distribution Test				Data Distribution				
		k star (bias corrected)	0.209	Data do not follow a Discernable Distribution (0.05)				
		Theta Star	0.229					
		nu star	34.62					
		Approximate Chi Square Value (.05)	22.16	Nonparametric Statistics				
		Adjusted Level of Significance	0.0471			95% CLT UCL	0.115	
		Adjusted Chi Square Value	21.99			95% Jackknife UCL	0.116	
						95% Standard Bootstrap UCL	0.115	
		Anderson-Darling Test Statistic	18.38			95% Bootstrap-t UCL	1.896	
		Anderson-Darling 5% Critical Value	0.907			95% Hall's Bootstrap UCL	1.317	
		Kolmogorov-Smirnov Test Statistic	0.399			95% Percentile Bootstrap UCL	0.129	
		Kolmogorov-Smirnov 5% Critical Value	0.108			95% BCA Bootstrap UCL	0.179	
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	0.227	
						97.5% Chebyshev(Mean, Sd) UCL	0.304	
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL	0.456	
		95% Approximate Gamma UCL	0.0748					
		95% Adjusted Gamma UCL	0.0754					
Potential UCL to Use				Use 97.5% Chebyshev (Mean, Sd) UCL				0.304

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples		166	
Number of Unique Samples			159
Raw Statistics		Log-transformed Statistics	
Minimum	6.17	Minimum of Log Data	1.82
Maximum	7650	Maximum of Log Data	8.942
Mean	433.8	Mean of log Data	5.141
Median	192.5	SD of log Data	1.438
SD	786.8		
Coefficient of Variation	1.814		
Skewness	5.977		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.293	Lilliefors Test Statistic	0.0981
Lilliefors Critical Value	0.0688	Lilliefors Critical Value	0.0688
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	534.8	95% H-UCL	640.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	793.9
95% Adjusted-CLT UCL	564.5	97.5% Chebyshev (MVUE) UCL	932.2
95% Modified-t UCL	539.6	99% Chebyshev (MVUE) UCL	1204
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.647	Data do not follow a Discernable Distribution (0.05)	
Theta Star	670.5		
nu star	214.8		
Approximate Chi Square Value (.05)	181.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0486	95% CLT UCL	534.3
Adjusted Chi Square Value	181.6	95% Jackknife UCL	534.8
		95% Standard Bootstrap UCL	533.1
Anderson-Darling Test Statistic	3.192	95% Bootstrap-t UCL	586.2
Anderson-Darling 5% Critical Value	0.805	95% Hall's Bootstrap UCL	949.7
Kolmogorov-Smirnov Test Statistic	0.111	95% Percentile Bootstrap UCL	544.3
Kolmogorov-Smirnov 5% Critical Value	0.0758	95% BCA Bootstrap UCL	573.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	700
		97.5% Chebyshev(Mean, Sd) UCL	815.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1041
95% Approximate Gamma UCL	512.3		
95% Adjusted Gamma UCL	513.1		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	815.2

APPENDIX A-3

NORTH OF MARLIN SURFACE SOIL

General UCL Statistics for Full Data Sets	
User Selected Options	
From File	J:\1352 - Gulfco RI\riskleco\Tables for Revisited SLERA\surface soil N or Marlin aug 2008.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result or 1/2 DL (2-methylnaphthalene)

General Statistics			
Number of Valid Samples		18	
Number of Unique Samples			15
Raw Statistics		Log-transformed Statistics	
Minimum	0.005	Minimum of Log Data	-5.298
Maximum	0.053	Maximum of Log Data	-2.937
Mean	0.0123	Mean of log Data	-4.795
Median	0.0059	SD of log Data	0.772
SD	0.0148		
Coefficient of Variation	1.21		
Skewness	2.182		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.528	Shapiro Wilk Test Statistic	0.605
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0184	95% H-UCL	0.0173
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0202
95% Adjusted-CLT UCL	0.02	97.5% Chebyshev (MVUE) UCL	0.0242
95% Modified-t UCL	0.0187	99% Chebyshev (MVUE) UCL	0.0321
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.211	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0101		
nu star	43.61		
Approximate Chi Square Value (.05)	29.47	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.018
Adjusted Chi Square Value	28.35	95% Jackknife UCL	0.0184
		95% Standard Bootstrap UCL	0.0178
Anderson-Darling Test Statistic	3.817	95% Bootstrap-t UCL	0.0243
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	0.0176
Kolmogorov-Smirnov Test Statistic	0.442	95% Percentile Bootstrap UCL	0.0186
Kolmogorov-Smirnov 5% Critical Value	0.208	95% BCA Bootstrap UCL	0.0202
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0275
		97.5% Chebyshev(Mean, Sd) UCL	0.0341
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0471
95% Approximate Gamma UCL	0.0182		
95% Adjusted Gamma UCL	0.0189		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL		0.0275
Result or 1/2 DL (4,4'-dde)				
General Statistics				
Number of Valid Samples		18	Number of Unique Samples	
			16	
Raw Statistics		Log-transformed Statistics		
	Minimum	1.9150E-4	Minimum of Log Data	-8.561
	Maximum	0.0149	Maximum of Log Data	-4.206
	Mean	0.0011	Mean of log Data	-8.002
	Median	2.1175E-4	SD of log Data	1.162
	SD	0.0034		
	Coefficient of Variation	2.898		
	Skewness	4.099		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.324	Shapiro Wilk Test Statistic	0.529
	Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0026	95% H-UCL	0.0014
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0014
	95% Adjusted-CLT UCL	0.0033	97.5% Chebyshev (MVUE) UCL	0.0018
	95% Modified-t UCL	0.0027	99% Chebyshev (MVUE) UCL	0.0025
Gamma Distribution Test		Data Distribution		
	k star (bias corrected)	0.454	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	0.0026		
	nu star	16.33		
Approximate Chi Square Value (.05)		8.194	Nonparametric Statistics	
	Adjusted Level of Significance	0.0357	95% CLT UCL	0.0025
	Adjusted Chi Square Value	7.645	95% Jackknife UCL	0.0026
			95% Standard Bootstrap UCL	0.0024
	Anderson-Darling Test Statistic	4.607	95% Bootstrap-t UCL	0.0141
	Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	0.0144
	Kolmogorov-Smirnov Test Statistic	0.483	95% Percentile Bootstrap UCL	0.0027
	Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0037
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0047
			97.5% Chebyshev(Mean, Sd) UCL	0.0062
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0093
	95% Approximate Gamma UCL	0.0023		
	95% Adjusted Gamma UCL	0.0025		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.0093
Result or 1/2 DL (4,4'-ddt)				

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum		7.4000E-5	Minimum of Log Data		-9.511
Maximum		0.0108	Maximum of Log Data		-4.528
Mean		0.0012	Mean of log Data		-7.956
Median		2.7225E-4	SD of log Data		1.604
SD		0.0026			
Coefficient of Variation		2.045			
Skewness		3.311			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.51	Shapiro Wilk Test Statistic		0.856
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0023	95% H-UCL		0.0052
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0032
95% Adjusted-CLT UCL		0.0027	97.5% Chebyshev (MVUE) UCL		0.0042
95% Modified-t UCL		0.0024	99% Chebyshev (MVUE) UCL		0.0060
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.448	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0028			
nu star		16.14			
Approximate Chi Square Value (.05)		8.064	Nonparametric Statistics		
Adjusted Level of Significance		0.0357	95% CLT UCL		0.0022
Adjusted Chi Square Value		7.52	95% Jackknife UCL		0.0023
			95% Standard Bootstrap UCL		0.0022
Anderson-Darling Test Statistic		1.361	95% Bootstrap-t UCL		0.0055
Anderson-Darling 5% Critical Value		0.801	95% Hall's Bootstrap UCL		0.0066
Kolmogorov-Smirnov Test Statistic		0.238	95% Percentile Bootstrap UCL		0.0023
Kolmogorov-Smirnov 5% Critical Value		0.215	95% BCA Bootstrap UCL		0.0029
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0039
			97.5% Chebyshev(Mean, Sd) UCL		0.0051
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0073
95% Approximate Gamma UCL		0.0025			
95% Adjusted Gamma UCL		0.0027			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.0073

Result or 1/2 DL (acenaphthene)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		13
Raw Statistics			Log-transformed Statistics		
Minimum		0.005	Minimum of Log Data		-5.298

Maximum	0.157	Maximum of Log Data	-1.852
Mean	0.0161	Mean of log Data	-4.856
Median	0.0055	SD of log Data	0.897
SD	0.0358		
Coefficient of Variation	2.227		
Skewness	4.027		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.344	Shapiro Wilk Test Statistic	0.518
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0307	95% H-UCL	0.0201
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0227
95% Adjusted-CLT UCL	0.0385	97.5% Chebyshev (MVUE) UCL	0.0276
95% Modified-t UCL	0.0321	99% Chebyshev (MVUE) UCL	0.0373
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.717	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0224		
nu star	25.83		
Approximate Chi Square Value (.05)	15.25	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0299
Adjusted Chi Square Value	14.47	95% Jackknife UCL	0.0307
		95% Standard Bootstrap UCL	0.0291
Anderson-Darling Test Statistic	4.505	95% Bootstrap-t UCL	0.111
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	0.114
Kolmogorov-Smirnov Test Statistic	0.479	95% Percentile Bootstrap UCL	0.032
Kolmogorov-Smirnov 5% Critical Value	0.211	95% BCA Bootstrap UCL	0.0427
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0528
		97.5% Chebyshev(Mean, Sd) UCL	0.0687
		99% Chebyshev(Mean, Sd) UCL	0.0999
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0272		
95% Adjusted Gamma UCL	0.0287		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0528

Result or 1/2 DL (acenaphthylene)

General Statistics

Number of Valid Samples	18	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0038	Minimum of Log Data	-5.562
Maximum	0.0555	Maximum of Log Data	-2.891
Mean	0.0099	Mean of log Data	-4.972
Median	0.0060	SD of log Data	0.693
SD	0.0131		
Coefficient of Variation	1.324		

Skewness		3.101		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.443		Shapiro Wilk Test Statistic	0.613
Shapiro Wilk Critical Value	0.897		Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0153		95% H-UCL	0.0128
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0152
95% Adjusted-CLT UCL	0.0174		97.5% Chebyshev (MVUE) UCL	0.0181
95% Modified-t UCL	0.0157		99% Chebyshev (MVUE) UCL	0.0236
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	1.325		Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0074			
nu star	47.68			
Approximate Chi Square Value (.05)	32.83		Nonparametric Statistics	
Adjusted Level of Significance	0.0357		95% CLT UCL	0.015
Adjusted Chi Square Value	31.65		95% Jackknife UCL	0.0153
			95% Standard Bootstrap UCL	0.0146
Anderson-Darling Test Statistic	3.815		95% Bootstrap-t UCL	0.0698
Anderson-Darling 5% Critical Value	0.756		95% Hall's Bootstrap UCL	0.0705
Kolmogorov-Smirnov Test Statistic	0.469		95% Percentile Bootstrap UCL	0.0155
Kolmogorov-Smirnov 5% Critical Value	0.207		95% BCA Bootstrap UCL	0.0171
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0234
			97.5% Chebyshev(Mean, Sd) UCL	0.0292
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0407
95% Approximate Gamma UCL	0.0144			
95% Adjusted Gamma UCL	0.0149			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL	0.0234

Result or 1/2 DL (aluminum)

General Statistics				
Number of Valid Samples	18	Number of Unique Samples	17	
Raw Statistics			Log-transformed Statistics	
Minimum	1810	Minimum of Log Data	7.501	
Maximum	16800	Maximum of Log Data	9.729	
Mean	10673	Mean of log Data	9.189	
Median	10300	SD of log Data	0.496	
SD	3687			
Coefficient of Variation	0.345			
Skewness	-0.368			
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Test Statistic	0.767	

Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		12185	95% H-UCL		14135
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		16791
95% Adjusted-CLT UCL		12022	97.5% Chebyshev (MVUE) UCL		19299
95% Modified-t UCL		12172	99% Chebyshev (MVUE) UCL		24226
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		5.015	Data appear Normal at 5% Significance Level		
Theta Star		2128			
nu star		180.5			
Approximate Chi Square Value (.05)		150.5	Nonparametric Statistics		
Adjusted Level of Significance		0.0357	95% CLT UCL		12103
Adjusted Chi Square Value		147.8	95% Jackknife UCL		12185
			95% Standard Bootstrap UCL		12068
Anderson-Darling Test Statistic		0.664	95% Bootstrap-t UCL		12127
Anderson-Darling 5% Critical Value		0.742	95% Hall's Bootstrap UCL		12096
Kolmogorov-Smirnov Test Statistic		0.162	95% Percentile Bootstrap UCL		12042
Kolmogorov-Smirnov 5% Critical Value		0.204	95% BCA Bootstrap UCL		11983
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		14461
			97.5% Chebyshev(Mean, Sd) UCL		16100
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		19319
95% Approximate Gamma UCL		12807			
95% Adjusted Gamma UCL		13035			
Potential UCL to Use			Use 95% Student's-t UCL		12185

Result or 1/2 DL (anthracene)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		17
Raw Statistics			Log-transformed Statistics		
Minimum		0.0037	Minimum of Log Data		-5.594
Maximum		0.264	Maximum of Log Data		-1.332
Mean		0.0257	Mean of log Data		-4.612
Median		0.0061	SD of log Data		1.094
SD		0.0609			
Coefficient of Variation		2.366			
Skewness		3.946			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.38	Shapiro Wilk Test Statistic		0.67
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0507	95% H-UCL		0.0379

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0389
95% Adjusted-CLT UCL	0.0636	97.5% Chebyshev (MVUE) UCL		0.0484
95% Modified-t UCL	0.0529	99% Chebyshev (MVUE) UCL		0.0668
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.573	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0449			
nu star	20.61			
Approximate Chi Square Value (.05)	11.3	Nonparametric Statistics		
Adjusted Level of Significance	0.0357	95% CLT UCL		0.0493
Adjusted Chi Square Value	10.64	95% Jackknife UCL		0.0507
		95% Standard Bootstrap UCL		0.0491
Anderson-Darling Test Statistic	3.451	95% Bootstrap-t UCL		0.147
Anderson-Darling 5% Critical Value	0.787	95% Hall's Bootstrap UCL		0.129
Kolmogorov-Smirnov Test Statistic	0.402	95% Percentile Bootstrap UCL		0.0529
Kolmogorov-Smirnov 5% Critical Value	0.213	95% BCA Bootstrap UCL		0.07
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0882
		97.5% Chebyshev(Mean, Sd) UCL		0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.168
95% Approximate Gamma UCL	0.0469			
95% Adjusted Gamma UCL	0.0498			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.168

Result or 1/2 DL (antimony)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		14
Raw Statistics			Log-transformed Statistics		
Minimum		0.095	Minimum of Log Data		-2.354
Maximum		8.09	Maximum of Log Data		2.091
Mean		1.744	Mean of log Data		-0.535
Median		0.893	SD of log Data		1.721
SD		2.146			
Coefficient of Variation		1.231			
Skewness		1.659			

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.768	Shapiro Wilk Test Statistic	0.775
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.624	95% H-UCL	12.83
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.755
95% Adjusted-CLT UCL	2.787	97.5% Chebyshev (MVUE) UCL	8.738
95% Modified-t UCL	2.657	99% Chebyshev (MVUE) UCL	12.63
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	0.512	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.403		
nu star	18.45		
Approximate Chi Square Value (.05)	9.713	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	2.576
Adjusted Chi Square Value	9.109	95% Jackknife UCL	2.624
		95% Standard Bootstrap UCL	2.581
Anderson-Darling Test Statistic	1.671	95% Bootstrap-t UCL	3.048
Anderson-Darling 5% Critical Value	0.794	95% Hall's Bootstrap UCL	3.327
Kolmogorov-Smirnov Test Statistic	0.321	95% Percentile Bootstrap UCL	2.6
Kolmogorov-Smirnov 5% Critical Value	0.214	95% BCA Bootstrap UCL	2.801
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.949
		97.5% Chebyshev(Mean, Sd) UCL	4.903
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.777
95% Approximate Gamma UCL	3.311		
95% Adjusted Gamma UCL	3.531		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	6.777

Result or 1/2 DL (aroclor-1254)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	0.0019	Minimum of Log Data	-6.258
Maximum	0.0155	Maximum of Log Data	-4.167
Mean	0.0037	Mean of log Data	-5.839
Median	0.0021	SD of log Data	0.633
SD	0.0038		
Coefficient of Variation	1.01		
Skewness	2.557		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.541	Shapiro Wilk Test Statistic	0.674
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0053	95% H-UCL	0.0049
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0059
95% Adjusted-CLT UCL	0.0058	97.5% Chebyshev (MVUE) UCL	0.0069
95% Modified-t UCL	0.0054	99% Chebyshev (MVUE) UCL	0.0089
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.76	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0021		
nu star	63.37		
Approximate Chi Square Value (.05)	46.06	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0052

Adjusted Chi Square Value	44.64	95% Jackknife UCL	0.0053
		95% Standard Bootstrap UCL	0.0052
Anderson-Darling Test Statistic	2.954	95% Bootstrap-t UCL	0.0098
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	0.0115
Kolmogorov-Smirnov Test Statistic	0.342	95% Percentile Bootstrap UCL	0.0053
Kolmogorov-Smirnov 5% Critical Value	0.206	95% BCA Bootstrap UCL	0.0058
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0077
		97.5% Chebyshev(Mean, Sd) UCL	0.0094
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0127
95% Approximate Gamma UCL	0.0052		
95% Adjusted Gamma UCL	0.0053		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0077

Result or 1/2 DL (arsenic)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	0.34	Minimum of Log Data	-1.079
Maximum	5.69	Maximum of Log Data	1.739
Mean	2.522	Mean of log Data	0.778
Median	2.525	SD of log Data	0.654
SD	1.164		
Coefficient of Variation	0.461		
Skewness	0.663		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.904	Shapiro Wilk Test Statistic	0.773
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.999	95% H-UCL	3.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.546
95% Adjusted-CLT UCL	3.019	97.5% Chebyshev (MVUE) UCL	5.362
95% Modified-t UCL	3.006	99% Chebyshev (MVUE) UCL	6.966
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3	Data appear Normal at 5% Significance Level	
Theta Star	0.841		
nu star	108		
Approximate Chi Square Value (.05)	85.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	2.973
Adjusted Chi Square Value	83.06	95% Jackknife UCL	2.999
		95% Standard Bootstrap UCL	2.965
Anderson-Darling Test Statistic	1.238	95% Bootstrap-t UCL	3.063
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	3.234
Kolmogorov-Smirnov Test Statistic	0.215	95% Percentile Bootstrap UCL	2.938

Kolmogorov-Smirnov 5% Critical Value		0.205	95% BCA Bootstrap UCL		2.979
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		3.718
			97.5% Chebyshev(Mean, Sd) UCL		4.235
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		5.251
95% Approximate Gamma UCL		3.204			
95% Adjusted Gamma UCL		3.28			
Potential UCL to Use			Use 95% Student's-t UCL		2.999
Result or 1/2 DL (barium)					
General Statistics					
Number of Valid Samples		18	Number of Unique Samples		18
Raw Statistics			Log-transformed Statistics		
Minimum		46.1	Minimum of Log Data		3.831
Maximum		476	Maximum of Log Data		6.165
Mean		145.2	Mean of log Data		4.783
Median		114	SD of log Data		0.59
SD		115.8			
Coefficient of Variation		0.798			
Skewness		2.357			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.641	Shapiro Wilk Test Statistic		0.885
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		192.6	95% H-UCL		192.6
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		229.8
95% Adjusted-CLT UCL		206.3	97.5% Chebyshev (MVUE) UCL		268.4
95% Modified-t UCL		195.2	99% Chebyshev (MVUE) UCL		344.2
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		2.308	Data do not follow a Discernable Distribution (0.05)		
Theta Star		62.88			
nu star		83.1			
Approximate Chi Square Value (.05)		63.09	Nonparametric Statistics		
Adjusted Level of Significance		0.0357	95% CLT UCL		190.1
Adjusted Chi Square Value		61.42	95% Jackknife UCL		192.6
			95% Standard Bootstrap UCL		188.9
Anderson-Darling Test Statistic		1.375	95% Bootstrap-t UCL		291.7
Anderson-Darling 5% Critical Value		0.748	95% Hall's Bootstrap UCL		491.8
Kolmogorov-Smirnov Test Statistic		0.275	95% Percentile Bootstrap UCL		192.6
Kolmogorov-Smirnov 5% Critical Value		0.205	95% BCA Bootstrap UCL		203.6
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		264.2
			97.5% Chebyshev(Mean, Sd) UCL		315.6
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		416.8
95% Approximate Gamma UCL		191.2			

95% Adjusted Gamma UCL				196.4				
Potential UCL to Use					Use 95% Chebyshev (Mean, Sd) UCL			
					264.2			
Result or 1/2 DL (benzo(a)anthracene)								
General Statistics								
Number of Valid Samples				18	Number of Unique Samples			
					16			
Raw Statistics					Log-transformed Statistics			
		Minimum	0.0025			Minimum of Log Data	-5.985	
		Maximum	1.18			Maximum of Log Data	0.166	
		Mean	0.0715			Mean of log Data	-4.973	
		Median	0.0055			SD of log Data	1.392	
		SD	0.277					
		Coefficient of Variation	3.872					
		Skewness	4.239					
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
		Shapiro Wilk Test Statistic	0.264			Shapiro Wilk Test Statistic	0.534	
		Shapiro Wilk Critical Value	0.897			Shapiro Wilk Critical Value	0.897	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
		95% Student's-t UCL	0.185			95% H-UCL	0.0551	
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	0.0442	
		95% Adjusted-CLT UCL	0.248			97.5% Chebyshev (MVUE) UCL	0.0562	
		95% Modified-t UCL	0.196			99% Chebyshev (MVUE) UCL	0.0797	
Gamma Distribution Test				Data Distribution				
		k star (bias corrected)	0.284	Data do not follow a Discernable Distribution (0.05)				
		Theta Star	0.252					
		nu star	10.21					
		Approximate Chi Square Value (.05)	4.075	Nonparametric Statistics				
		Adjusted Level of Significance	0.0357			95% CLT UCL	0.179	
		Adjusted Chi Square Value	3.71			95% Jackknife UCL	0.185	
						95% Standard Bootstrap UCL	0.177	
		Anderson-Darling Test Statistic	5.324			95% Bootstrap-t UCL	14.79	
		Anderson-Darling 5% Critical Value	0.844			95% Hall's Bootstrap UCL	7.368	
		Kolmogorov-Smirnov Test Statistic	0.52			95% Percentile Bootstrap UCL	0.201	
		Kolmogorov-Smirnov 5% Critical Value	0.221			95% BCA Bootstrap UCL	0.266	
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	0.356	
						97.5% Chebyshev(Mean, Sd) UCL	0.479	
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL	0.72	
		95% Approximate Gamma UCL	0.179					
		95% Adjusted Gamma UCL	0.197					
Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL	0.72	

Result or 1/2 DL (benzo(a)pyrene)

General Statistics			
Number of Valid Samples		18	
Number of Unique Samples		18	
Raw Statistics		Log-transformed Statistics	
Minimum	0.0045	Minimum of Log Data	-5.403
Maximum	1.42	Maximum of Log Data	0.351
Mean	0.114	Mean of log Data	-4.036
Median	0.0057	SD of log Data	1.734
SD	0.33		
Coefficient of Variation	2.903		
Skewness	4.073		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.36	Shapiro Wilk Test Statistic	0.746
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.249	95% H-UCL	0.405
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.209
95% Adjusted-CLT UCL	0.322	97.5% Chebyshev (MVUE) UCL	0.27
95% Modified-t UCL	0.262	99% Chebyshev (MVUE) UCL	0.391
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.337	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.338		
nu star	12.12		
Approximate Chi Square Value (.05)	5.306	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.242
Adjusted Chi Square Value	4.879	95% Jackknife UCL	0.249
		95% Standard Bootstrap UCL	0.239
Anderson-Darling Test Statistic	2.633	95% Bootstrap-t UCL	0.832
Anderson-Darling 5% Critical Value	0.83	95% Hall's Bootstrap UCL	0.709
Kolmogorov-Smirnov Test Statistic	0.345	95% Percentile Bootstrap UCL	0.264
Kolmogorov-Smirnov 5% Critical Value	0.219	95% BCA Bootstrap UCL	0.353
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.453
		97.5% Chebyshev(Mean, Sd) UCL	0.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.888
95% Approximate Gamma UCL	0.26		
95% Adjusted Gamma UCL	0.283		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.888

Result or 1/2 DL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples		18	
Number of Unique Samples		17	

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0036	Minimum of Log Data	-5.625	
	Maximum	1.62	Maximum of Log Data	0.482	
	Mean	0.146	Mean of log Data	-3.661	
	Median	0.0228	SD of log Data	1.923	
	SD	0.374			
	Coefficient of Variation	2.566			
	Skewness	4.004			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.398	Shapiro Wilk Test Statistic	0.858	
	Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.299	95% H-UCL	1.165	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.436	
	95% Adjusted-CLT UCL	0.38	97.5% Chebyshev (MVUE) UCL	0.569	
	95% Modified-t UCL	0.313	99% Chebyshev (MVUE) UCL	0.829	
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.355	Data Follow Appr. Gamma Distribution at 5% Significance Level		
	Theta Star	0.411			
	nu star	12.79			
	Approximate Chi Square Value (.05)	5.752	Nonparametric Statistics		
	Adjusted Level of Significance	0.0357	95% CLT UCL	0.291	
	Adjusted Chi Square Value	5.305	95% Jackknife UCL	0.299	
			95% Standard Bootstrap UCL	0.287	
	Anderson-Darling Test Statistic	1.361	95% Bootstrap-t UCL	0.79	
	Anderson-Darling 5% Critical Value	0.825	95% Hall's Bootstrap UCL	0.816	
	Kolmogorov-Smirnov Test Statistic	0.215	95% Percentile Bootstrap UCL	0.32	
	Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.412	
Data follow Appr. Gamma Distribution at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.531	
			97.5% Chebyshev(Mean, Sd) UCL	0.697	
			99% Chebyshev(Mean, Sd) UCL	1.024	
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	0.324			
	95% Adjusted Gamma UCL	0.352			
Potential UCL to Use			Use 95% Adjusted Gamma UCL	0.352	

Result or 1/2 DL (benzo(g,h,i)perylene)

General Statistics					
	Number of Valid Samples	18	Number of Unique Samples	16	
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0051	Minimum of Log Data	-5.269	
	Maximum	1.28	Maximum of Log Data	0.247	
	Mean	0.132	Mean of log Data	-3.564	
	Median	0.0239	SD of log Data	1.755	

SD	0.303	
Coefficient of Variation	2.288	
Skewness	3.593	

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.468	Shapiro Wilk Test Statistic	0.86
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.256	95% H-UCL	0.698
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.349
95% Adjusted-CLT UCL	0.314	97.5% Chebyshev (MVUE) UCL	0.452
95% Modified-t UCL	0.267	99% Chebyshev (MVUE) UCL	0.654
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.39	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.34		
nu star	14.03		
Approximate Chi Square Value (.05)	6.589	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.25
Adjusted Chi Square Value	6.105	95% Jackknife UCL	0.256
		95% Standard Bootstrap UCL	0.241
Anderson-Darling Test Statistic	1.426	95% Bootstrap-t UCL	0.568
Anderson-Darling 5% Critical Value	0.816	95% Hall's Bootstrap UCL	0.625
Kolmogorov-Smirnov Test Statistic	0.237	95% Percentile Bootstrap UCL	0.258
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	0.346
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.443
		97.5% Chebyshev(Mean, Sd) UCL	0.578
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.842
95% Approximate Gamma UCL	0.282		
95% Adjusted Gamma UCL	0.304		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.842

Result or 1/2 DL (benzo(k)fluoranthene)

General Statistics

Number of Valid Samples		18	Number of Unique Samples		15
Raw Statistics			Log-transformed Statistics		
Minimum	0.0055		Minimum of Log Data	-5.203	
Maximum	0.799		Maximum of Log Data	-0.224	
Mean	0.0689		Mean of log Data	-4.071	
Median	0.0087		SD of log Data	1.38	
SD	0.186				
Coefficient of Variation	2.698				
Skewness	3.985				

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.374		Shapiro Wilk Test Statistic		0.711	
Shapiro Wilk Critical Value		0.897		Shapiro Wilk Critical Value		0.897	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.145		95% H-UCL		0.132	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.107	
95% Adjusted-CLT UCL		0.185		97.5% Chebyshev (MVUE) UCL		0.136	
95% Modified-t UCL		0.152		99% Chebyshev (MVUE) UCL		0.192	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.421		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.164					
nu star		15.17					
Approximate Chi Square Value (.05)		7.377		Nonparametric Statistics			
Adjusted Level of Significance		0.0357		95% CLT UCL		0.141	
Adjusted Chi Square Value		6.86		95% Jackknife UCL		0.145	
				95% Standard Bootstrap UCL		0.138	
Anderson-Darling Test Statistic		3.135		95% Bootstrap-t UCL		0.537	
Anderson-Darling 5% Critical Value		0.808		95% Hall's Bootstrap UCL		0.407	
Kolmogorov-Smirnov Test Statistic		0.418		95% Percentile Bootstrap UCL		0.152	
Kolmogorov-Smirnov 5% Critical Value		0.216		95% BCA Bootstrap UCL		0.201	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.26	
				97.5% Chebyshev(Mean, Sd) UCL		0.342	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.505	
95% Approximate Gamma UCL		0.142					
95% Adjusted Gamma UCL		0.152					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.505	
Result or 1/2 DL (beryllium)							
General Statistics							
Number of Valid Samples		18		Number of Unique Samples		16	
Raw Statistics				Log-transformed Statistics			
Minimum		0.013		Minimum of Log Data		-4.343	
Maximum		2.88		Maximum of Log Data		1.058	
Mean		0.708		Mean of log Data		-0.74	
Median		0.645		SD of log Data		1.172	
SD		0.604					
Coefficient of Variation		0.854					
Skewness		2.849					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.673		Shapiro Wilk Test Statistic		0.749	
Shapiro Wilk Critical Value		0.897		Shapiro Wilk Critical Value		0.897	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.956	95% H-UCL		2.17		
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		2.115		
95% Adjusted-CLT UCL		1.044	97.5% Chebyshev (MVUE) UCL		2.644		
95% Modified-t UCL		0.972	99% Chebyshev (MVUE) UCL		3.682		
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.213	Data do not follow a Discernable Distribution (0.05)				
Theta Star		0.584					
nu star		43.65					
Approximate Chi Square Value (.05)		29.5	Nonparametric Statistics				
Adjusted Level of Significance		0.0357	95% CLT UCL		0.942		
Adjusted Chi Square Value		28.39	95% Jackknife UCL		0.956		
			95% Standard Bootstrap UCL		0.937		
Anderson-Darling Test Statistic		1.404	95% Bootstrap-t UCL		1.129		
Anderson-Darling 5% Critical Value		0.758	95% Hall's Bootstrap UCL		2.056		
Kolmogorov-Smirnov Test Statistic		0.251	95% Percentile Bootstrap UCL		0.954		
Kolmogorov-Smirnov 5% Critical Value		0.208	95% BCA Bootstrap UCL		1.031		
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.329		
			97.5% Chebyshev(Mean, Sd) UCL		1.597		
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		2.125		
95% Approximate Gamma UCL		1.047					
95% Adjusted Gamma UCL		1.088					
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		2.125		
Result or 1/2 DL (bis(2-ethylhexyl)phthalate)							
General Statistics							
Number of Valid Samples		18	Number of Unique Samples		18		
Raw Statistics			Log-transformed Statistics				
Minimum		0.0122	Minimum of Log Data		-4.406		
Maximum		0.239	Maximum of Log Data		-1.431		
Mean		0.0462	Mean of log Data		-3.333		
Median		0.0302	SD of log Data		0.638		
SD		0.0502					
Coefficient of Variation		1.087					
Skewness		3.679					
Relevant UCL Statistics							
Normal Distribution Test			Lognormal Distribution Test				
Shapiro Wilk Test Statistic		0.51	Shapiro Wilk Test Statistic		0.875		
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897		
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution			Assuming Lognormal Distribution				
95% Student's-t UCL		0.0668	95% H-UCL		0.0612		
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.073		
95% Adjusted-CLT UCL		0.0766	97.5% Chebyshev (MVUE) UCL		0.0859		
95% Modified-t UCL		0.0685	99% Chebyshev (MVUE) UCL		0.111		

Gamma Distribution Test				Data Distribution			
k star (bias corrected)	1.78	Data do not follow a Discernable Distribution (0.05)					
Theta Star	0.0259						
nu star	64.09						
Approximate Chi Square Value (.05)	46.67	Nonparametric Statistics					
Adjusted Level of Significance	0.0357			95% CLT UCL	0.0657		
Adjusted Chi Square Value	45.25			95% Jackknife UCL	0.0668		
				95% Standard Bootstrap UCL	0.0646		
Anderson-Darling Test Statistic	1.396			95% Bootstrap-t UCL	0.104		
Anderson-Darling 5% Critical Value	0.752			95% Hall's Bootstrap UCL	0.139		
Kolmogorov-Smirnov Test Statistic	0.211			95% Percentile Bootstrap UCL	0.0682		
Kolmogorov-Smirnov 5% Critical Value	0.206			95% BCA Bootstrap UCL	0.0799		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0978		
				97.5% Chebyshev(Mean, Sd) UCL	0.12		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.164		
95% Approximate Gamma UCL	0.0634						
95% Adjusted Gamma UCL	0.0654						
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	0.0978		

Result or 1/2 DL (boron)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	18
Raw Statistics		Log-transformed Statistics	
Minimum	0.555	Minimum of Log Data	-0.589
Maximum	39.2	Maximum of Log Data	3.669
Mean	8.028	Mean of log Data	1.381
Median	5.12	SD of log Data	1.371
SD	9.477		
Coefficient of Variation	1.18		
Skewness	2.32		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.742	Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.91	95% H-UCL	29.94
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.56
95% Adjusted-CLT UCL	13.01	97.5% Chebyshev (MVUE) UCL	31.16
95% Modified-t UCL	12.12	99% Chebyshev (MVUE) UCL	44.12

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.738	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.88		
nu star	26.55		

Approximate Chi Square Value (.05)	15.81	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	11.7
Adjusted Chi Square Value	15.01	95% Jackknife UCL	11.91
		95% Standard Bootstrap UCL	11.67
Anderson-Darling Test Statistic	0.516	95% Bootstrap-t UCL	15.02
Anderson-Darling 5% Critical Value	0.774	95% Hall's Bootstrap UCL	27.35
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	12.15
Kolmogorov-Smirnov 5% Critical Value	0.211	95% BCA Bootstrap UCL	13.52
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.76
		97.5% Chebyshev(Mean, Sd) UCL	21.98
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	30.25
95% Approximate Gamma UCL	13.49		
95% Adjusted Gamma UCL	14.2		
Potential UCL to Use		Use 95% Approximate Gamma UCL	13.49

Result or 1/2 DL (butyl benzyl phthalate)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	0.0045	Minimum of Log Data	-5.389
Maximum	0.151	Maximum of Log Data	-1.89
Mean	0.016	Mean of log Data	-4.8
Median	0.0067	SD of log Data	0.851
SD	0.0344		
Coefficient of Variation	2.146		
Skewness	3.972		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.344	Shapiro Wilk Test Statistic	0.543
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0302	95% H-UCL	0.0196
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0225
95% Adjusted-CLT UCL	0.0375	97.5% Chebyshev (MVUE) UCL	0.0272
95% Modified-t UCL	0.0314	99% Chebyshev (MVUE) UCL	0.0365
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.769	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0209		
nu star	27.67		
Approximate Chi Square Value (.05)	16.67	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0294
Adjusted Chi Square Value	15.85	95% Jackknife UCL	0.0302
		95% Standard Bootstrap UCL	0.0295
Anderson-Darling Test Statistic	4.475	95% Bootstrap-t UCL	0.385

Anderson-Darling 5% Critical Value	0.772	95% Hall's Bootstrap UCL	0.242
Kolmogorov-Smirnov Test Statistic	0.5	95% Percentile Bootstrap UCL	0.0308
Kolmogorov-Smirnov 5% Critical Value	0.21	95% BCA Bootstrap UCL	0.0403
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0514
		97.5% Chebyshev(Mean, Sd) UCL	0.0667
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0968
95% Approximate Gamma UCL	0.0266		
95% Adjusted Gamma UCL	0.028		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0514

Result or 1/2 DL (cadmium)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.003	Minimum of Log Data	-5.809
Maximum	0.8	Maximum of Log Data	-0.223
Mean	0.207	Mean of log Data	-3.089
Median	0.0135	SD of log Data	2.132
SD	0.252		
Coefficient of Variation	1.218		
Skewness	0.938		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.779	Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.31	95% H-UCL	4.758
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.167
95% Adjusted-CLT UCL	0.319	97.5% Chebyshev (MVUE) UCL	1.534
95% Modified-t UCL	0.313	99% Chebyshev (MVUE) UCL	2.253
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.395	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.524		
nu star	14.22		
Approximate Chi Square Value (.05)	6.721	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.305
Adjusted Chi Square Value	6.231	95% Jackknife UCL	0.31
		95% Standard Bootstrap UCL	0.3
Anderson-Darling Test Statistic	1.701	95% Bootstrap-t UCL	0.33
Anderson-Darling 5% Critical Value	0.815	95% Hall's Bootstrap UCL	0.319
Kolmogorov-Smirnov Test Statistic	0.293	95% Percentile Bootstrap UCL	0.303
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	0.312
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.466
		97.5% Chebyshev(Mean, Sd) UCL	0.578

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.799
95% Approximate Gamma UCL	0.438			
95% Adjusted Gamma UCL	0.473			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.799

Result or 1/2 DL (carbazole)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum		0.0048	Minimum of Log Data		-5.334
Maximum		0.128	Maximum of Log Data		-2.056
Mean		0.0153	Mean of log Data		-4.778
Median		0.0055	SD of log Data		0.879
SD		0.0289			
Coefficient of Variation		1.885			
Skewness		3.888			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.401		Shapiro Wilk Test Statistic	0.656
	Shapiro Wilk Critical Value	0.897		Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0272		95% H-UCL	0.021
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0239
	95% Adjusted-CLT UCL	0.0332		97.5% Chebyshev (MVUE) UCL	0.029
	95% Modified-t UCL	0.0282		99% Chebyshev (MVUE) UCL	0.0391
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.841	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.0182			
	nu star	30.27			
	Approximate Chi Square Value (.05)	18.71	Nonparametric Statistics		
	Adjusted Level of Significance	0.0357		95% CLT UCL	0.0265
	Adjusted Chi Square Value	17.84		95% Jackknife UCL	0.0272
				95% Standard Bootstrap UCL	0.0262
	Anderson-Darling Test Statistic	3.213		95% Bootstrap-t UCL	0.0712
	Anderson-Darling 5% Critical Value	0.768		95% Hall's Bootstrap UCL	0.0646
	Kolmogorov-Smirnov Test Statistic	0.404		95% Percentile Bootstrap UCL	0.0278
	Kolmogorov-Smirnov 5% Critical Value	0.21		95% BCA Bootstrap UCL	0.0357
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.045
				97.5% Chebyshev(Mean, Sd) UCL	0.0579
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.0831
	95% Approximate Gamma UCL	0.0248			
	95% Adjusted Gamma UCL	0.026			
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	0.045

Result or 1/2 DL (chromium)			
General Statistics			
Number of Valid Samples	18	Number of Unique Samples	18
Raw Statistics		Log-transformed Statistics	
Minimum	7.9	Minimum of Log Data	2.067
Maximum	128	Maximum of Log Data	4.852
Mean	20.26	Mean of log Data	2.683
Median	11.6	SD of log Data	0.658
SD	27.58		
Coefficient of Variation	1.361		
Skewness	3.912		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.425	Shapiro Wilk Test Statistic	0.74
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	31.56	95% H-UCL	25.79
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	30.69
95% Adjusted-CLT UCL	37.35	97.5% Chebyshev (MVUE) UCL	36.22
95% Modified-t UCL	32.56	99% Chebyshev (MVUE) UCL	47.08
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.441	Data do not follow a Discernable Distribution (0.05)	
Theta Star	14.06		
nu star	51.88		
Approximate Chi Square Value (.05)	36.34	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	30.95
Adjusted Chi Square Value	35.09	95% Jackknife UCL	31.56
		95% Standard Bootstrap UCL	30.82
Anderson-Darling Test Statistic	2.456	95% Bootstrap-t UCL	67.02
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	67.3
Kolmogorov-Smirnov Test Statistic	0.331	95% Percentile Bootstrap UCL	32.34
Kolmogorov-Smirnov 5% Critical Value	0.207	95% BCA Bootstrap UCL	39.83
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	48.59
		97.5% Chebyshev(Mean, Sd) UCL	60.85
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	84.93
95% Approximate Gamma UCL	28.92		
95% Adjusted Gamma UCL	29.95		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	48.59

Result or 1/2 DL (chrysene)			
General Statistics			

Number of Valid Samples		18	Number of Unique Samples		17
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0045		Minimum of Log Data	-5.392
	Maximum	1.3		Maximum of Log Data	0.262
	Mean	0.102		Mean of log Data	-4.114
	Median	0.0051		SD of log Data	1.687
	SD	0.302			
	Coefficient of Variation	2.951			
	Skewness	4.085			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.354		Shapiro Wilk Test Statistic	0.77
	Shapiro Wilk Critical Value	0.897		Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.226		95% H-UCL	0.319
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.177
	95% Adjusted-CLT UCL	0.293		97.5% Chebyshev (MVUE) UCL	0.229
	95% Modified-t UCL	0.238		99% Chebyshev (MVUE) UCL	0.33
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.34	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.301			
	nu star	12.25			
	Approximate Chi Square Value (.05)	5.394	Nonparametric Statistics		
	Adjusted Level of Significance	0.0357		95% CLT UCL	0.22
	Adjusted Chi Square Value	4.962		95% Jackknife UCL	0.226
				95% Standard Bootstrap UCL	0.215
	Anderson-Darling Test Statistic	2.54		95% Bootstrap-t UCL	0.797
	Anderson-Darling 5% Critical Value	0.829		95% Hall's Bootstrap UCL	0.622
	Kolmogorov-Smirnov Test Statistic	0.295		95% Percentile Bootstrap UCL	0.242
	Kolmogorov-Smirnov 5% Critical Value	0.219		95% BCA Bootstrap UCL	0.324
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.413
				97.5% Chebyshev(Mean, Sd) UCL	0.548
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.812
	95% Approximate Gamma UCL	0.233			
	95% Adjusted Gamma UCL	0.253			
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	0.812

Result or 1/2 DL (cobalt)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		18
Raw Statistics			Log-transformed Statistics		
	Minimum	2.81		Minimum of Log Data	1.033
	Maximum	7.87		Maximum of Log Data	2.063

Mean	5.789	Mean of log Data	1.718
Median	5.84	SD of log Data	0.299
SD	1.506		
Coefficient of Variation	0.26		
Skewness	-0.505		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6.406	95% H-UCL	6.668
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.623
95% Adjusted-CLT UCL	6.328	97.5% Chebyshev (MVUE) UCL	8.407
95% Modified-t UCL	6.399	99% Chebyshev (MVUE) UCL	9.946
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.08	Data appear Normal at 5% Significance Level	
Theta Star	0.522		
nu star	399		
Approximate Chi Square Value (.05)	353.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	6.373
Adjusted Chi Square Value	349.6	95% Jackknife UCL	6.406
		95% Standard Bootstrap UCL	6.355
Anderson-Darling Test Statistic	0.559	95% Bootstrap-t UCL	6.36
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	6.317
Kolmogorov-Smirnov Test Statistic	0.143	95% Percentile Bootstrap UCL	6.351
Kolmogorov-Smirnov 5% Critical Value	0.203	95% BCA Bootstrap UCL	6.292
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.336
		97.5% Chebyshev(Mean, Sd) UCL	8.006
		99% Chebyshev(Mean, Sd) UCL	9.321
Assuming Gamma Distribution			
95% Approximate Gamma UCL	6.53		
95% Adjusted Gamma UCL	6.607		
Potential UCL to Use		Use 95% Student's-t UCL	6.406

Result or 1/2 DL (copper)

General Statistics

Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	5.9	Minimum of Log Data	1.775
Maximum	200	Maximum of Log Data	5.298
Mean	24.13	Mean of log Data	2.621
Median	9.895	SD of log Data	0.865
SD	44.66		
Coefficient of Variation	1.851		
Skewness	4.008		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.401	Shapiro Wilk Test Statistic	0.799
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	42.44	95% H-UCL	33.52
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	38.28
95% Adjusted-CLT UCL	52.07	97.5% Chebyshev (MVUE) UCL	46.43
95% Modified-t UCL	44.1	99% Chebyshev (MVUE) UCL	62.43
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.889	Data do not follow a Discernable Distribution (0.05)	
Theta Star	27.13		
nu star	32.02		
Approximate Chi Square Value (.05)	20.09	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	41.44
Adjusted Chi Square Value	19.18	95% Jackknife UCL	42.44
		95% Standard Bootstrap UCL	41.19
Anderson-Darling Test Statistic	2.14	95% Bootstrap-t UCL	104.9
Anderson-Darling 5% Critical Value	0.766	95% Hall's Bootstrap UCL	104
Kolmogorov-Smirnov Test Statistic	0.271	95% Percentile Bootstrap UCL	44.28
Kolmogorov-Smirnov 5% Critical Value	0.209	95% BCA Bootstrap UCL	55.66
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	70.01
		97.5% Chebyshev(Mean, Sd) UCL	89.86
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	128.9
95% Approximate Gamma UCL	38.46		
95% Adjusted Gamma UCL	40.28		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	70.01

Result or 1/2 DL (dibenz(a,h)anthracene)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.0034	Minimum of Log Data	-5.674
Maximum	0.404	Maximum of Log Data	-0.906
Mean	0.0471	Mean of log Data	-4.462
Median	0.0054	SD of log Data	1.498
SD	0.101		
Coefficient of Variation	2.145		
Skewness	3.017		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.501	Shapiro Wilk Test Statistic	0.7
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL	0.0885			95% H-UCL	0.125		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0889		
95% Adjusted-CLT UCL	0.104			97.5% Chebyshev (MVUE) UCL	0.114		
95% Modified-t UCL	0.0913			99% Chebyshev (MVUE) UCL	0.162		
Gamma Distribution Test				Data Distribution			
k star (bias corrected)	0.419			Data do not follow a Discernable Distribution (0.05)			
Theta Star	0.112						
nu star	15.07						
Approximate Chi Square Value (.05)	7.313			Nonparametric Statistics			
Adjusted Level of Significance	0.0357			95% CLT UCL	0.0862		
Adjusted Chi Square Value	6.798			95% Jackknife UCL	0.0885		
				95% Standard Bootstrap UCL	0.0843		
Anderson-Darling Test Statistic	3.091			95% Bootstrap-t UCL	0.148		
Anderson-Darling 5% Critical Value	0.809			95% Hall's Bootstrap UCL	0.18		
Kolmogorov-Smirnov Test Statistic	0.429			95% Percentile Bootstrap UCL	0.088		
Kolmogorov-Smirnov 5% Critical Value	0.216			95% BCA Bootstrap UCL	0.105		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.151		
				97.5% Chebyshev(Mean, Sd) UCL	0.196		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.284		
95% Approximate Gamma UCL	0.0971						
95% Adjusted Gamma UCL	0.104						
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	0.284		

Result or 1/2 DL (dibenzofuran)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.0030	Minimum of Log Data	-5.799
Maximum	0.0862	Maximum of Log Data	-2.451
Mean	0.0129	Mean of log Data	-4.835
Median	0.0075	SD of log Data	0.834
SD	0.0201		
Coefficient of Variation	1.556		
Skewness	3.331		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk Test Statistic	0.726
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0212	95% H-UCL	0.0183
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0212

95% Adjusted-CLT UCL	0.0247	97.5% Chebyshev (MVUE) UCL	0.0256
95% Modified-t UCL	0.0218	99% Chebyshev (MVUE) UCL	0.0342
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.006	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0129		
nu star	36.23		
Approximate Chi Square Value (.05)	23.45	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0207
Adjusted Chi Square Value	22.47	95% Jackknife UCL	0.0212
		95% Standard Bootstrap UCL	0.0206
Anderson-Darling Test Statistic	3.039	95% Bootstrap-t UCL	0.0773
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	0.0886
Kolmogorov-Smirnov Test Statistic	0.443	95% Percentile Bootstrap UCL	0.0213
Kolmogorov-Smirnov 5% Critical Value	0.209	95% BCA Bootstrap UCL	0.0258
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0336
		97.5% Chebyshev(Mean, Sd) UCL	0.0426
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0602
95% Approximate Gamma UCL	0.02		
95% Adjusted Gamma UCL	0.0209		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0336

Result or 1/2 DL (dieltrin)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	8.2500E-5	Minimum of Log Data	-9.403
Maximum	0.0054	Maximum of Log Data	-5.212
Mean	4.8661E-4	Mean of log Data	-8.757
Median	9.1250E-5	SD of log Data	1.152
SD	0.0012		
Coefficient of Variation	2.608		
Skewness	3.946		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.362	Shapiro Wilk Test Statistic	0.621
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0010	95% H-UCL	6.8487E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.7672E-4
95% Adjusted-CLT UCL	0.0012	97.5% Chebyshev (MVUE) UCL	8.4448E-4
95% Modified-t UCL	0.0010	99% Chebyshev (MVUE) UCL	0.0011
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.499	Data do not follow a Discernable Distribution (0.05)	

Theta Star	9.7586E-4		
nu star	17.95		
Approximate Chi Square Value (.05)	9.356	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	9.7856E-4
Adjusted Chi Square Value	8.764	95% Jackknife UCL	0.0010
		95% Standard Bootstrap UCL	9.7408E-4
Anderson-Darling Test Statistic	3.815	95% Bootstrap-t UCL	0.0056
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	0.0043
Kolmogorov-Smirnov Test Statistic	0.405	95% Percentile Bootstrap UCL	0.0010
Kolmogorov-Smirnov 5% Critical Value	0.214	95% BCA Bootstrap UCL	0.0013
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0017
		97.5% Chebyshev(Mean, Sd) UCL	0.0023
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0034
95% Approximate Gamma UCL	9.3369E-4		
95% Adjusted Gamma UCL	9.9676E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0034

Result or 1/2 DL (diethyl phthalate)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	0.0037	Minimum of Log Data	-5.578
Maximum	0.0498	Maximum of Log Data	-3
Mean	0.0113	Mean of log Data	-4.651
Median	0.0093	SD of log Data	.0521
SD	0.0098		
Coefficient of Variation	0.874		
Skewness	3.836		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.447	Shapiro Wilk Test Statistic	0.715
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0154	95% H-UCL	0.0142
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0169
95% Adjusted-CLT UCL	0.0174	97.5% Chebyshev (MVUE) UCL	0.0195
95% Modified-t UCL	0.0157	99% Chebyshev (MVUE) UCL	0.0246
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.625	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0043		
nu star	94.5		
Approximate Chi Square Value (.05)	73.08	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0151
Adjusted Chi Square Value	71.27	95% Jackknife UCL	0.0154

Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0357
				97.5% Chebyshev(Mean, Sd) UCL		0.0434
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0585
95% Approximate Gamma UCL		0.0246				
95% Adjusted Gamma UCL		0.0253				
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.0357
Result or 1/2 DL (di-n-octyl phthalate)						
General Statistics						
Number of Valid Samples		18	Number of Unique Samples		16	
Raw Statistics			Log-transformed Statistics			
Minimum		0.0042	Minimum of Log Data		-5.463	
Maximum		0.123	Maximum of Log Data		-2.096	
Mean		0.0144	Mean of log Data		-4.844	
Median		0.0047	SD of log Data		0.879	
SD		0.0276				
Coefficient of Variation		1.926				
Skewness		3.985				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.391	Shapiro Wilk Test Statistic		0.708	
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		0.0257	95% H-UCL		0.0197	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0224	
95% Adjusted-CLT UCL		0.0316	97.5% Chebyshev (MVUE) UCL		0.0272	
95% Modified-t UCL		0.0267	99% Chebyshev (MVUE) UCL		0.0366	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.842	Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0171				
nu star		30.3				
Approximate Chi Square Value (.05)		18.73	Nonparametric Statistics			
Adjusted Level of Significance		0.0357	95% CLT UCL		0.0251	
Adjusted Chi Square Value		17.86	95% Jackknife UCL		0.0257	
			95% Standard Bootstrap UCL		0.0253	
Anderson-Darling Test Statistic		2.764	95% Bootstrap-t UCL		0.075	
Anderson-Darling 5% Critical Value		0.768	95% Hall's Bootstrap UCL		0.0654	
Kolmogorov-Smirnov Test Statistic		0.319	95% Percentile Bootstrap UCL		0.0273	
Kolmogorov-Smirnov 5% Critical Value		0.21	95% BCA Bootstrap UCL		0.0341	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0428	
			97.5% Chebyshev(Mean, Sd) UCL		0.0551	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0792	
95% Approximate Gamma UCL		0.0232				
95% Adjusted Gamma UCL		0.0244				

Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL			
				0.0428			
Result or 1/2 DL (endrin)							
General Statistics							
Number of Valid Samples		18		Number of Unique Samples		17	
Raw Statistics				Log-transformed Statistics			
Minimum		1.0000E-4		Minimum of Log Data		-9.21	
Maximum		0.0014		Maximum of Log Data		-6.509	
Mean		3.0408E-4		Mean of log Data		-8.649	
Median		1.1075E-4		SD of log Data		0.908	
SD		4.4300E-4					
Coefficient of Variation		1.457					
Skewness		2.426					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.511		Shapiro Wilk Test Statistic		0.646	
Shapiro Wilk Critical Value		0.897		Shapiro Wilk Critical Value		0.897	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		4.8573E-4		95% H-UCL		4.6104E-4	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		5.1891E-4	
95% Adjusted-CLT UCL		5.3964E-4		97.5% Chebyshev (MVUE) UCL		6.3236E-4	
95% Modified-t UCL		4.9568E-4		99% Chebyshev (MVUE) UCL		8.5520E-4	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.906		Data do not follow a Discernable Distribution (0.05)			
Theta Star		3.3553E-4					
nu star		32.63					
Approximate Chi Square Value (.05)		20.57		Nonparametric Statistics			
Adjusted Level of Significance		0.0357		95% CLT UCL		4.7583E-4	
Adjusted Chi Square Value		19.65		95% Jackknife UCL		4.8573E-4	
				95% Standard Bootstrap UCL		4.7115E-4	
Anderson-Darling Test Statistic		3.335		95% Bootstrap-t UCL		9.7138E-4	
Anderson-Darling 5% Critical Value		0.766		95% Hall's Bootstrap UCL		0.0011	
Kolmogorov-Smirnov Test Statistic		0.413		95% Percentile Bootstrap UCL		4.9036E-4	
Kolmogorov-Smirnov 5% Critical Value		0.209		95% BCA Bootstrap UCL		5.6164E-4	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		7.5922E-4	
				97.5% Chebyshev(Mean, Sd) UCL		9.5616E-4	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0013	
95% Approximate Gamma UCL		4.8233E-4					
95% Adjusted Gamma UCL		5.0484E-4					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		7.5922E-4	
Result or 1/2 DL (endrin aldehyde)							

General Statistics			
Number of Valid Samples		18	Number of Unique Samples 16
Raw Statistics		Log-transformed Statistics	
Minimum	1.9750E-4	Minimum of Log Data	-8.53
Maximum	0.0016	Maximum of Log Data	-6.413
Mean	3.3575E-4	Mean of log Data	-8.206
Median	2.1825E-4	SD of log Data	0.538
SD	3.4111E-4		
Coefficient of Variation	1.016		
Skewness	3.689		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.442	Shapiro Wilk Test Statistic	0.628
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.7561E-4	95% H-UCL	4.1301E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.9211E-4
95% Adjusted-CLT UCL	5.4269E-4	97.5% Chebyshev (MVUE) UCL	5.6981E-4
95% Modified-t UCL	4.8726E-4	99% Chebyshev (MVUE) UCL	7.2243E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.175	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.5434E-4		
nu star	78.31		
Approximate Chi Square Value (.05)	58.93	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	4.6800E-4
Adjusted Chi Square Value	57.31	95% Jackknife UCL	4.7561E-4
		95% Standard Bootstrap UCL	4.6765E-4
Anderson-Darling Test Statistic	3.127	95% Bootstrap-t UCL	9.5486E-4
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	9.2712E-4
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	4.8614E-4
Kolmogorov-Smirnov 5% Critical Value	0.206	95% BCA Bootstrap UCL	5.9244E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.8620E-4
		97.5% Chebyshev(Mean, Sd) UCL	8.3784E-4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0011
95% Approximate Gamma UCL	4.4622E-4		
95% Adjusted Gamma UCL	4.5878E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	6.8620E-4

Result or 1/2 DL (endrin ketone)

General Statistics			
Number of Valid Samples		18	Number of Unique Samples 18
Raw Statistics		Log-transformed Statistics	

Minimum	2.4750E-4	Minimum of Log Data	-8.304
Maximum	0.0096	Maximum of Log Data	-4.64
Mean	8.7406E-4	Mean of log Data	-7.889
Median	2.7375E-4	SD of log Data	0.918
SD	0.0022		
Coefficient of Variation	2.531		
Skewness	4.128		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.312	Shapiro Wilk Test Statistic	0.485
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0017	95% H-UCL	0.001
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0011
95% Adjusted-CLT UCL	0.0022	97.5% Chebyshev (MVUE) UCL	0.0013
95% Modified-t UCL	0.0018	99% Chebyshev (MVUE) UCL	0.0018
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.631	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0013		
nu star	22.7		
Approximate Chi Square Value (.05)	12.87	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0017
Adjusted Chi Square Value	12.16	95% Jackknife UCL	0.0017
		95% Standard Bootstrap UCL	0.0017
Anderson-Darling Test Statistic	4.879	95% Bootstrap-t UCL	0.0203
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	0.0194
Kolmogorov-Smirnov Test Statistic	0.476	95% Percentile Bootstrap UCL	0.0018
Kolmogorov-Smirnov 5% Critical Value	0.212	95% BCA Bootstrap UCL	0.0028
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0031
		97.5% Chebyshev(Mean, Sd) UCL	0.0041
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0060
95% Approximate Gamma UCL	0.0015		
95% Adjusted Gamma UCL	0.0016		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0031

Result or 1/2 DL (fluoranthene)

General Statistics

Number of Valid Samples		18	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum	0.0033		Minimum of Log Data	-5.69	
Maximum	2.19		Maximum of Log Data	0.784	
Mean	0.159		Mean of log Data	-3.978	
Median	0.0064		SD of log Data	1.767	
SD	0.511				

Coefficient of Variation		3.208		
Skewness		4.123		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.334		Shapiro Wilk Test Statistic	0.777
Shapiro Wilk Critical Value	0.897		Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.369		95% H-UCL	0.481
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.236
95% Adjusted-CLT UCL	0.483		97.5% Chebyshev (MVUE) UCL	0.305
95% Modified-t UCL	0.389		99% Chebyshev (MVUE) UCL	0.443
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.303		Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.526			
nu star	10.9			
Approximate Chi Square Value (.05)	4.51		Nonparametric Statistics	
Adjusted Level of Significance	0.0357		95% CLT UCL	0.358
Adjusted Chi Square Value	4.122		95% Jackknife UCL	0.369
			95% Standard Bootstrap UCL	0.357
Anderson-Darling Test Statistic	2.855		95% Bootstrap-t UCL	1.743
Anderson-Darling 5% Critical Value	0.838		95% Hall's Bootstrap UCL	1.443
Kolmogorov-Smirnov Test Statistic	0.332		95% Percentile Bootstrap UCL	0.392
Kolmogorov-Smirnov 5% Critical Value	0.22		95% BCA Bootstrap UCL	0.53
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.685
			97.5% Chebyshev(Mean, Sd) UCL	0.912
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	1.358
95% Approximate Gamma UCL	0.385			
95% Adjusted Gamma UCL	0.421			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	1.358

Result or 1/2 DL (fluorene)

General Statistics					
Number of Valid Samples		18	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum		0.0034	Minimum of Log Data		-5.671
Maximum		0.141	Maximum of Log Data		-1.959
Mean		0.0163	Mean of log Data		-4.835
Median		0.0054	SD of log Data		0.973
SD		0.0324			
Coefficient of Variation		1.986			
Skewness		3.744			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		

Shapiro Wilk Test Statistic	0.419	Shapiro Wilk Test Statistic	0.679
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0296	95% H-UCL	0.0236
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0259
95% Adjusted-CLT UCL	0.0361	97.5% Chebyshev (MVUE) UCL	0.0318
95% Modified-t UCL	0.0307	99% Chebyshev (MVUE) UCL	0.0433
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.722	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0226		
nu star	25.98		
Approximate Chi Square Value (.05)	15.36	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0289
Adjusted Chi Square Value	14.58	95% Jackknife UCL	0.0296
		95% Standard Bootstrap UCL	0.0283
Anderson-Darling Test Statistic	3.308	95% Bootstrap-t UCL	0.0734
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	0.0694
Kolmogorov-Smirnov Test Statistic	0.441	95% Percentile Bootstrap UCL	0.0303
Kolmogorov-Smirnov 5% Critical Value	0.211	95% BCA Bootstrap UCL	0.0394
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0496
		97.5% Chebyshev(Mean, Sd) UCL	0.064
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0923
95% Approximate Gamma UCL	0.0276		
95% Adjusted Gamma UCL	0.0291		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0496

Result or 1/2 DL (indeno(1,2,3-cd)pyrene)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	17
Raw Statistics		Log-transformed Statistics	
Minimum	0.0082	Minimum of Log Data	-4.798
Maximum	1.51	Maximum of Log Data	0.412
Mean	0.151	Mean of log Data	-3.227
Median	0.0338	SD of log Data	1.61
SD	0.349		
Coefficient of Variation	2.305		
Skewness	3.88		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.433	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

95% Student's-t UCL		0.294	95% H-UCL		0.604
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.373
95% Adjusted-CLT UCL		0.367	97.5% Chebyshev (MVUE) UCL		0.48
95% Modified-t UCL		0.307	99% Chebyshev (MVUE) UCL		0.691
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.435	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.347			
nu star		15.68			
Approximate Chi Square Value (.05)		7.735	Nonparametric Statistics		
Adjusted Level of Significance		0.0357	95% CLT UCL		0.286
Adjusted Chi Square Value		7.204	95% Jackknife UCL		0.294
			95% Standard Bootstrap UCL		0.283
Anderson-Darling Test Statistic		1.422	95% Bootstrap-t UCL		0.715
Anderson-Darling 5% Critical Value		0.805	95% Hall's Bootstrap UCL		0.755
Kolmogorov-Smirnov Test Statistic		0.238	95% Percentile Bootstrap UCL		0.31
Kolmogorov-Smirnov 5% Critical Value		0.216	95% BCA Bootstrap UCL		0.406
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.509
			97.5% Chebyshev(Mean, Sd) UCL		0.664
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.969
95% Approximate Gamma UCL		0.306			
95% Adjusted Gamma UCL		0.329			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.969
Result or 1/2 DL (iron)					
General Statistics					
Number of Valid Samples		18	Number of Unique Samples		18
Raw Statistics			Log-transformed Statistics		
Minimum		8450	Minimum of Log Data		9.042
Maximum		102000	Maximum of Log Data		11.53
Mean		19477	Mean of log Data		9.653
Median		14700	SD of log Data		0.564
SD		21073			
Coefficient of Variation		1.082			
Skewness		3.929			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.446	Shapiro Wilk Test Statistic		0.786
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		28117	95% H-UCL		24305
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		28989
95% Adjusted-CLT UCL		32561	97.5% Chebyshev (MVUE) UCL		33713
95% Modified-t UCL		28884	99% Chebyshev (MVUE) UCL		42995

Gamma Distribution Test				Data Distribution	
k star (bias corrected)	2.024	Data do not follow a Discernable Distribution (0.05)			
Theta Star	9622				
nu star	72.87				
Approximate Chi Square Value (.05)	54.22	Nonparametric Statistics			
Adjusted Level of Significance	0.0357	95% CLT UCL		27646	
Adjusted Chi Square Value	52.67	95% Jackknife UCL		28117	
		95% Standard Bootstrap UCL		27363	
Anderson-Darling Test Statistic	1.88	95% Bootstrap-t UCL		50030	
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL		59925	
Kolmogorov-Smirnov Test Statistic	0.266	95% Percentile Bootstrap UCL		29158	
Kolmogorov-Smirnov 5% Critical Value	0.206	95% BCA Bootstrap UCL		34109	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		41127	
		97.5% Chebyshev(Mean, Sd) UCL		50495	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		68897	
95% Approximate Gamma UCL	26179				
95% Adjusted Gamma UCL	26946				
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL		41127	
Result or 1/2 DL (lead)					
General Statistics					
Number of Valid Samples		18	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum	8.22	Minimum of Log Data		2.107	
Maximum	471	Maximum of Log Data		6.155	
Mean	57.7	Mean of log Data		3.182	
Median	17.1	SD of log Data		1.161	
SD	111.1				
Coefficient of Variation	1.926				
Skewness	3.403				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.491	Shapiro Wilk Test Statistic		0.821	
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value		0.897	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	103.3	95% H-UCL		107	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		105.1	
95% Adjusted-CLT UCL	123.2	97.5% Chebyshev (MVUE) UCL		131.2	
95% Modified-t UCL	106.8	99% Chebyshev (MVUE) UCL		182.5	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	0.615	Data do not follow a Discernable Distribution (0.05)			
Theta Star	93.85				
nu star	22.13				
Approximate Chi Square Value (.05)	12.44	Nonparametric Statistics			

Adjusted Level of Significance	0.0357	95% CLT UCL	100.8
Adjusted Chi Square Value	11.74	95% Jackknife UCL	103.3
		95% Standard Bootstrap UCL	99.39
Anderson-Darling Test Statistic	2.108	95% Bootstrap-t UCL	197
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	232.9
Kolmogorov-Smirnov Test Statistic	0.352	95% Percentile Bootstrap UCL	105.7
Kolmogorov-Smirnov 5% Critical Value	0.212	95% BCA Bootstrap UCL	130.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	171.9
		97.5% Chebyshev(Mean, Sd) UCL	221.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	318.3
95% Approximate Gamma UCL	102.7		
95% Adjusted Gamma UCL	108.7		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	318.3

Result or 1/2 DL (lithium)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	18
Raw Statistics		Log-transformed Statistics	
Minimum	2.59	Minimum of Log Data	0.952
Maximum	26.6	Maximum of Log Data	3.281
Mean	16.57	Mean of log Data	2.729
Median	16.15	SD of log Data	0.49
SD	5.136		
Coefficient of Variation	0.31		
Skewness	-0.697		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Test Statistic	0.671
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.68	95% H-UCL	21.97
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.08
95% Adjusted-CLT UCL	18.35	97.5% Chebyshev (MVUE) UCL	29.95
95% Modified-t UCL	18.64	99% Chebyshev (MVUE) UCL	37.54
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.486	Data appear Normal at 5% Significance Level	
Theta Star	3.021		
nu star	197.5		
Approximate Chi Square Value (.05)	166	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	18.56
Adjusted Chi Square Value	163.2	95% Jackknife UCL	18.68
		95% Standard Bootstrap UCL	18.51
Anderson-Darling Test Statistic	1.234	95% Bootstrap-t UCL	18.55
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	18.52

Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL	18.41
Kolmogorov-Smirnov 5% Critical Value	0.204	95% BCA Bootstrap UCL	18.37
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.85
		97.5% Chebyshev(Mean, Sd) UCL	24.13
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.62
95% Approximate Gamma UCL	19.72		
95% Adjusted Gamma UCL	20.05		
Potential UCL to Use		Use 95% Student's-t UCL	18.68

Result or 1/2 DL (manganese)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	18
Raw Statistics		Log-transformed Statistics	
Minimum	82.3	Minimum of Log Data	4.41
Maximum	1210	Maximum of Log Data	7.098
Mean	369.5	Mean of log Data	5.754
Median	296	SD of log Data	0.565
SD	247.7		
Coefficient of Variation	0.67		
Skewness	2.484		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.741	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	471	95% H-UCL	493.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	588.4
95% Adjusted-CLT UCL	502	97.5% Chebyshev (MVUE) UCL	684.4
95% Modified-t UCL	476.7	99% Chebyshev (MVUE) UCL	872.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.813	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	131.3		
nu star	101.3		
Approximate Chi Square Value (.05)	79.05	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	465.5
Adjusted Chi Square Value	77.16	95% Jackknife UCL	471
		95% Standard Bootstrap UCL	461.6
Anderson-Darling Test Statistic	0.663	95% Bootstrap-t UCL	536.8
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	887
Kolmogorov-Smirnov Test Statistic	0.172	95% Percentile Bootstrap UCL	465.4
Kolmogorov-Smirnov 5% Critical Value	0.205	95% BCA Bootstrap UCL	499.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	623.9
		97.5% Chebyshev(Mean, Sd) UCL	734
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	950.3

95% Approximate Gamma UCL		473.3		
95% Adjusted Gamma UCL		484.9		
Potential UCL to Use			Use 95% Approximate Gamma UCL	473.3
Result or 1/2 DL (mercury)				
General Statistics				
Number of Valid Samples		18	Number of Unique Samples 15	
Raw Statistics			Log-transformed Statistics	
	Minimum	0.0011	Minimum of Log Data	-6.768
	Maximum	0.064	Maximum of Log Data	-2.749
	Mean	0.0126	Mean of log Data	-5.156
	Median	0.0074	SD of log Data	1.364
	SD	0.0163		
	Coefficient of Variation	1.295		
	Skewness	2.2		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.876
	Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	0.0193	95% H-UCL	0.0425
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0351
	95% Adjusted-CLT UCL	0.0211	97.5% Chebyshev (MVUE) UCL	0.0445
	95% Modified-t UCL	0.0196	99% Chebyshev (MVUE) UCL	0.063
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	0.673	Data Follow Appr. Gamma Distribution at 5% Significance Level	
	Theta Star	0.0187		
	nu star	24.24		
	Approximate Chi Square Value (.05)	14.04	Nonparametric Statistics	
	Adjusted Level of Significance	0.0357	95% CLT UCL	0.0189
	Adjusted Chi Square Value	13.29	95% Jackknife UCL	0.0193
			95% Standard Bootstrap UCL	0.0187
	Anderson-Darling Test Statistic	0.775	95% Bootstrap-t UCL	0.0246
	Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	0.0464
	Kolmogorov-Smirnov Test Statistic	0.234	95% Percentile Bootstrap UCL	0.0192
	Kolmogorov-Smirnov 5% Critical Value	0.211	95% BCA Bootstrap UCL	0.0209
Data follow Appr. Gamma Distribution at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0294
			97.5% Chebyshev(Mean, Sd) UCL	0.0366
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0509
	95% Approximate Gamma UCL	0.0218		
	95% Adjusted Gamma UCL	0.023		
Potential UCL to Use			Use 95% Approximate Gamma UCL	0.0218

Result or 1/2 DL (molybdenum)									
General Statistics									
Number of Valid Samples		18		Number of Unique Samples		15			
Raw Statistics				Log-transformed Statistics					
Minimum		0.037		Minimum of Log Data		-3.297			
Maximum		10.7		Maximum of Log Data		2.37			
Mean		0.949		Mean of log Data		-1.744			
Median		0.11		SD of log Data		1.698			
SD		2.5							
Coefficient of Variation		2.636							
Skewness		3.897							
Relevant UCL Statistics									
Normal Distribution Test				Lognormal Distribution Test					
Shapiro Wilk Test Statistic		0.406		Shapiro Wilk Test Statistic		0.851			
Shapiro Wilk Critical Value		0.897		Shapiro Wilk Critical Value		0.897			
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level					
Assuming Normal Distribution				Assuming Lognormal Distribution					
95% Student's-t UCL		1.974		95% H-UCL		3.547			
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		1.934			
95% Adjusted-CLT UCL		2.496		97.5% Chebyshev (MVUE) UCL		2.499			
95% Modified-t UCL		2.064		99% Chebyshev (MVUE) UCL		3.609			
Gamma Distribution Test				Data Distribution					
k star (bias corrected)		0.363		Data do not follow a Discernable Distribution (0.05)					
Theta Star		2.616							
nu star		13.05							
Approximate Chi Square Value (.05)		5.929		Nonparametric Statistics					
Adjusted Level of Significance		0.0357		95% CLT UCL		1.918			
Adjusted Chi Square Value		5.473		95% Jackknife UCL		1.974			
				95% Standard Bootstrap UCL		1.909			
Anderson-Darling Test Statistic		1.907		95% Bootstrap-t UCL		5.875			
Anderson-Darling 5% Critical Value		0.823		95% Hall's Bootstrap UCL		5.186			
Kolmogorov-Smirnov Test Statistic		0.276		95% Percentile Bootstrap UCL		2.078			
Kolmogorov-Smirnov 5% Critical Value		0.218		95% BCA Bootstrap UCL		2.807			
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		3.517			
				97.5% Chebyshev(Mean, Sd) UCL		4.629			
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		6.812			
95% Approximate Gamma UCL		2.088							
95% Adjusted Gamma UCL		2.262							
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		6.812			
Result or 1/2 DL (nickel)									
General Statistics									
Number of Valid Samples		18		Number of Unique Samples		17			

Raw Statistics		Log-transformed Statistics	
Minimum	11.7	Minimum of Log Data	2.46
Maximum	51.7	Maximum of Log Data	3.945
Mean	17.04	Mean of log Data	2.762
Median	14.6	SD of log Data	0.343
SD	9.054		
Coefficient of Variation	0.531		
Skewness	3.644		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.519	Shapiro Wilk Test Statistic	0.727
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.76	95% H-UCL	19.67
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22.75
95% Adjusted-CLT UCL	22.51	97.5% Chebyshev (MVUE) UCL	25.35
95% Modified-t UCL	21.06	99% Chebyshev (MVUE) UCL	30.46
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.852	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.912		
nu star	210.7		
Approximate Chi Square Value (.05)	178.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	20.55
Adjusted Chi Square Value	175.2	95% Jackknife UCL	20.76
		95% Standard Bootstrap UCL	20.4
Anderson-Darling Test Statistic	1.832	95% Bootstrap-t UCL	27.42
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	33.85
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	20.86
Kolmogorov-Smirnov 5% Critical Value	0.204	95% BCA Bootstrap UCL	23.26
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.35
		97.5% Chebyshev(Mean, Sd) UCL	30.37
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	38.28
95% Approximate Gamma UCL	20.16		
95% Adjusted Gamma UCL	20.49		
Potential UCL to Use		Use 95% Student's-t UCL	20.76
		or 95% Modified-t UCL	21.06
Result or 1/2 DL (phenanthrene)			
General Statistics			
Number of Valid Samples	18	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.0036	Minimum of Log Data	-5.614
Maximum	1.34	Maximum of Log Data	0.293

Mean	0.109	Mean of log Data	-3.947
Median	0.0071	SD of log Data	1.591
SD	0.314		
Coefficient of Variation	2.872		
Skewness	3.979		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.37	Shapiro Wilk Test Statistic	0.807
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.238	95% H-UCL	0.276
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.175
95% Adjusted-CLT UCL	0.305	97.5% Chebyshev (MVUE) UCL	0.225
95% Modified-t UCL	0.249	99% Chebyshev (MVUE) UCL	0.324
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.356	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.307		
nu star	12.81		
Approximate Chi Square Value (.05)	5.764	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.231
Adjusted Chi Square Value	5.316	95% Jackknife UCL	0.238
		95% Standard Bootstrap UCL	0.23
Anderson-Darling Test Statistic	2.6	95% Bootstrap-t UCL	0.851
Anderson-Darling 5% Critical Value	0.825	95% Hall's Bootstrap UCL	0.793
Kolmogorov-Smirnov Test Statistic	0.318	95% Percentile Bootstrap UCL	0.249
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.341
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.431
		97.5% Chebyshev(Mean, Sd) UCL	0.571
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.845
95% Approximate Gamma UCL	0.243		
95% Adjusted Gamma UCL	0.263		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.845

Result or 1/2 DL (pyrene)

General Statistics

Number of Valid Samples	18	Number of Unique Samples	17
-------------------------	----	--------------------------	----

Raw Statistics		Log-transformed Statistics	
Minimum	0.0061	Minimum of Log Data	-5.099
Maximum	1.87	Maximum of Log Data	0.626
Mean	0.147	Mean of log Data	-3.778
Median	0.0109	SD of log Data	1.68
SD	0.436		
Coefficient of Variation	2.972		
Skewness	4.066		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.357	Shapiro Wilk Test Statistic	0.795
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.325	95% H-UCL	0.436
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.244
95% Adjusted-CLT UCL	0.421	97.5% Chebyshev (MVUE) UCL	0.315
95% Modified-t UCL	0.342	99% Chebyshev (MVUE) UCL	0.455
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.337	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.435		
nu star	12.14		
Approximate Chi Square Value (.05)	5.319	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.316
Adjusted Chi Square Value	4.891	95% Jackknife UCL	0.325
		95% Standard Bootstrap UCL	0.317
Anderson-Darling Test Statistic	2.472	95% Bootstrap-t UCL	1.188
Anderson-Darling 5% Critical Value	0.829	95% Hall's Bootstrap UCL	0.978
Kolmogorov-Smirnov Test Statistic	0.28	95% Percentile Bootstrap UCL	0.343
Kolmogorov-Smirnov 5% Critical Value	0.219	95% BCA Bootstrap UCL	0.465
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.594
		97.5% Chebyshev(Mean, Sd) UCL	0.788
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.169
95% Approximate Gamma UCL	0.335		
95% Adjusted Gamma UCL	0.364		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.169

Result or 1/2 DL (silver)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0135	Minimum of Log Data	-4.305
Maximum	0.41	Maximum of Log Data	-0.892
Mean	0.0543	Mean of log Data	-3.38
Median	0.03	SD of log Data	0.781
SD	0.0909		
Coefficient of Variation	1.676		
Skewness	3.94		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.398	Shapiro Wilk Test Statistic	0.734
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0915		95% H-UCL		0.0721	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0843	
95% Adjusted-CLT UCL		0.111		97.5% Chebyshev (MVUE) UCL		0.101	
95% Modified-t UCL		0.0948		99% Chebyshev (MVUE) UCL		0.134	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.048		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0517					
nu star		37.74					
Approximate Chi Square Value (.05)		24.68		Nonparametric Statistics			
Adjusted Level of Significance		0.0357		95% CLT UCL		0.0895	
Adjusted Chi Square Value		23.66		95% Jackknife UCL		0.0915	
				95% Standard Bootstrap UCL		0.0886	
Anderson-Darling Test Statistic		2.923		95% Bootstrap-t UCL		0.231	
Anderson-Darling 5% Critical Value		0.762		95% Hall's Bootstrap UCL		0.2	
Kolmogorov-Smirnov Test Statistic		0.42		95% Percentile Bootstrap UCL		0.0964	
Kolmogorov-Smirnov 5% Critical Value		0.208		95% BCA Bootstrap UCL		0.12	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.148	
				97.5% Chebyshev(Mean, Sd) UCL		0.188	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.267	
95% Approximate Gamma UCL		0.083					
95% Adjusted Gamma UCL		0.0865					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.148	

Result or 1/2 DL (strontium)

General Statistics			
Number of Valid Samples		18	
			Number of Unique Samples
			18
Raw Statistics		Log-transformed Statistics	
Minimum	26.6	Minimum of Log Data	3.281
Maximum	93.6	Maximum of Log Data	4.539
Mean	57.32	Mean of log Data	3.989
Median	52.85	SD of log Data	0.364
SD	19.7		
Coefficient of Variation	0.344		
Skewness	0.325		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value		Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	68.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	79.37

95% Adjusted-CLT UCL	65.34	97.5% Chebyshev (MVUE) UCL	88.84
95% Modified-t UCL	65.45	99% Chebyshev (MVUE) UCL	107.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.18	Data appear Normal at 5% Significance Level	
Theta Star	7.983		
nu star	258.5		
Approximate Chi Square Value (.05)	222.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	64.96
Adjusted Chi Square Value	219	95% Jackknife UCL	65.4
		95% Standard Bootstrap UCL	64.93
Anderson-Darling Test Statistic	0.455	95% Bootstrap-t UCL	66.2
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	65.45
Kolmogorov-Smirnov Test Statistic	0.186	95% Percentile Bootstrap UCL	64.92
Kolmogorov-Smirnov 5% Critical Value	0.204	95% BCA Bootstrap UCL	64.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	77.56
		97.5% Chebyshev(Mean, Sd) UCL	86.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	103.5
95% Approximate Gamma UCL	66.66		
95% Adjusted Gamma UCL	67.64		
Potential UCL to Use		Use 95% Student's-t UCL	65.4

Result or 1/2 DL (thallium)

General Statistics			
Number of Valid Samples	18	Number of Unique Samples	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.0455	Minimum of Log Data	-3.09
Maximum	0.63	Maximum of Log Data	-0.462
Mean	0.109	Mean of log Data	-2.67
Median	0.05	SD of log Data	0.771
SD	0.16		
Coefficient of Variation	1.47		
Skewness	2.87		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.442	Shapiro Wilk Test Statistic	0.56
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.174	95% H-UCL	0.144
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.169
95% Adjusted-CLT UCL	0.198	97.5% Chebyshev (MVUE) UCL	0.202
95% Modified-t UCL	0.178	99% Chebyshev (MVUE) UCL	0.268
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.078	Data do not follow a Discernable Distribution (0.05)	

Theta Star		0.101															
nu star		38.82															
Approximate Chi Square Value (.05)		25.55		Nonparametric Statistics													
Adjusted Level of Significance		0.0357		95% CLT UCL										0.171			
Adjusted Chi Square Value		24.52		95% Jackknife UCL										0.174			
				95% Standard Bootstrap UCL										0.168			
Anderson-Darling Test Statistic		4.13		95% Bootstrap-t UCL										0.76			
Anderson-Darling 5% Critical Value		0.761		95% Hall's Bootstrap UCL										0.596			
Kolmogorov-Smirnov Test Statistic		0.397		95% Percentile Bootstrap UCL										0.167			
Kolmogorov-Smirnov 5% Critical Value		0.208		95% BCA Bootstrap UCL										0.196			
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL										0.273			
				97.5% Chebyshev(Mean, Sd) UCL										0.344			
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL										0.483			
95% Approximate Gamma UCL		0.165															
95% Adjusted Gamma UCL		0.172															
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL										0.273			
Result or 1/2 DL (tin)																	
General Statistics																	
Number of Valid Samples		18				Number of Unique Samples		14									
Raw Statistics				Log-transformed Statistics													
Minimum		0.195				Minimum of Log Data		-1.635									
Maximum		3.67				Maximum of Log Data		1.3									
Mean		0.625				Mean of log Data		-0.897									
Median		0.295				SD of log Data		0.805									
SD		0.846															
Coefficient of Variation		1.354															
Skewness		3.137															
Relevant UCL Statistics																	
Normal Distribution Test				Lognormal Distribution Test													
Shapiro Wilk Test Statistic		0.533				Shapiro Wilk Test Statistic		0.763									
Shapiro Wilk Critical Value		0.897				Shapiro Wilk Critical Value		0.897									
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level													
Assuming Normal Distribution				Assuming Lognormal Distribution													
95% Student's-t UCL		0.972				95% H-UCL		0.897									
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL		1.043									
95% Adjusted-CLT UCL		1.111				97.5% Chebyshev (MVUE) UCL		1.256									
95% Modified-t UCL		0.996				99% Chebyshev (MVUE) UCL		1.673									
Gamma Distribution Test				Data Distribution													
k star (bias corrected)		1.131		Data do not follow a Discernable Distribution (0.05)													
Theta Star		0.552															
nu star		40.73															
Approximate Chi Square Value (.05)		27.1		Nonparametric Statistics													
Adjusted Level of Significance		0.0357		95% CLT UCL										0.953			
Adjusted Chi Square Value		26.04		95% Jackknife UCL										0.972			

[illegible]

Result or 1/2 DL (titanium)

General Statistics

Number of Valid Samples		18	Number of Unique Samples		17
Raw Statistics			Log-transformed Statistics		
Minimum		3.41	Minimum of Log Data		1.227
Maximum		55.9	Maximum of Log Data		4.024
Mean		20.67	Mean of log Data		2.882
Median		18.7	SD of log Data		0.591
SD		11.65			
Coefficient of Variation		0.563			
Skewness		1.656			

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	25.45	95% H-UCL	28.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.38
95% Adjusted-CLT UCL	26.33	97.5% Chebyshev (MVUE) UCL	40.17
95% Modified-t UCL	25.63	99% Chebyshev (MVUE) UCL	51.53

Gamma Distribution Test		Data Distribution
k star (bias corrected)	3.002	Data appear Gamma Distributed at 5% Significance Level
Theta Star	6.886	
nu star	108.1	

Approximate Chi Square Value (.05)	85.08	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	25.19
Adjusted Chi Square Value	83.12	95% Jackknife UCL	25.45
		95% Standard Bootstrap UCL	25.01
Anderson-Darling Test Statistic	0.339	95% Bootstrap-t UCL	27.18
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	31.11
Kolmogorov-Smirnov Test Statistic	0.11	95% Percentile Bootstrap UCL	25.41
Kolmogorov-Smirnov 5% Critical Value	0.205	95% BCA Bootstrap UCL	26.43

Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		32.64
				97.5% Chebyshev(Mean, Sd) UCL		37.82
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		47.99
95% Approximate Gamma UCL		26.26				
95% Adjusted Gamma UCL		26.88				
Potential UCL to Use				Use 95% Approximate Gamma UCL		26.26
Result or 1/2 DL (vanadium)						
General Statistics						
Number of Valid Samples		18	Number of Unique Samples		18	
Raw Statistics			Log-transformed Statistics			
Minimum		7.85	Minimum of Log Data		2.061	
Maximum		45.8	Maximum of Log Data		3.824	
Mean		19.66	Mean of log Data		2.884	
Median		18.65	SD of log Data		0.449	
SD		9.126				
Coefficient of Variation		0.464				
Skewness		1.322				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.905	Shapiro Wilk Test Statistic		0.981	
Shapiro Wilk Critical Value		0.897	Shapiro Wilk Critical Value		0.897	
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		23.4	95% H-UCL		24.54	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		28.98	
95% Adjusted-CLT UCL		23.91	97.5% Chebyshev (MVUE) UCL		33.02	
95% Modified-t UCL		23.51	99% Chebyshev (MVUE) UCL		40.95	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		4.562	Data appear Normal at 5% Significance Level			
Theta Star		4.309				
nu star		164.2				
Approximate Chi Square Value (.05)		135.6	Nonparametric Statistics			
Adjusted Level of Significance		0.0357	95% CLT UCL		23.2	
Adjusted Chi Square Value		133.1	95% Jackknife UCL		23.4	
			95% Standard Bootstrap UCL		23.08	
Anderson-Darling Test Statistic		0.2	95% Bootstrap-t UCL		24.27	
Anderson-Darling 5% Critical Value		0.743	95% Hall's Bootstrap UCL		25.56	
Kolmogorov-Smirnov Test Statistic		0.0982	95% Percentile Bootstrap UCL		23.38	
Kolmogorov-Smirnov 5% Critical Value		0.204	95% BCA Bootstrap UCL		23.66	
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		29.03	
			97.5% Chebyshev(Mean, Sd) UCL		33.09	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		41.06	
95% Approximate Gamma UCL		23.81				
95% Adjusted Gamma UCL		24.26				

Potential UCL to Use						Use 95% Student's-t UCL				23.4	
Result or 1/2 DL (zinc)											
General Statistics											
Number of Valid Samples				18		Number of Unique Samples				18	
Raw Statistics						Log-transformed Statistics					
Minimum				29.5		Minimum of Log Data				3.384	
Maximum				5640		Maximum of Log Data				8.638	
Mean				418.4		Mean of log Data				4.562	
Median				53.95		SD of log Data				1.321	
SD				1308							
Coefficient of Variation				3.125							
Skewness				4.195							
Relevant UCL Statistics											
Normal Distribution Test						Lognormal Distribution Test					
Shapiro Wilk Test Statistic				0.313		Shapiro Wilk Test Statistic				0.791	
Shapiro Wilk Critical Value				0.897		Shapiro Wilk Critical Value				0.897	
Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
Assuming Normal Distribution						Assuming Lognormal Distribution					
95% Student's-t UCL				954.5		95% H-UCL				630.3	
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL				542.9	
95% Adjusted-CLT UCL				1251		97.5% Chebyshev (MVUE) UCL				686.4	
95% Modified-t UCL				1005		99% Chebyshev (MVUE) UCL				968.2	
Gamma Distribution Test						Data Distribution					
k star (bias corrected)				0.403		Data do not follow a Discernable Distribution (0.05)					
Theta Star				1037							
nu star				14.52							
Approximate Chi Square Value (.05)				6.931		Nonparametric Statistics					
Adjusted Level of Significance				0.0357		95% CLT UCL				925.3	
Adjusted Chi Square Value				6.432		95% Jackknife UCL				954.5	
						95% Standard Bootstrap UCL				894.1	
Anderson-Darling Test Statistic				2.911		95% Bootstrap-t UCL				5665	
Anderson-Darling 5% Critical Value				0.813		95% Hall's Bootstrap UCL				3753	
Kolmogorov-Smirnov Test Statistic				0.278		95% Percentile Bootstrap UCL				1025	
Kolmogorov-Smirnov 5% Critical Value				0.217		95% BCA Bootstrap UCL				1352	
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL				1762	
						97.5% Chebyshev(Mean, Sd) UCL				2343	
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL				3485	
95% Approximate Gamma UCL				876.6							
95% Adjusted Gamma UCL				944.6							
Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL				3485	

APPENDIX A-4

NORTH OF MARLIN SOIL

				General UCL Statistics for Full Data Sets							
User Selected Options											
From File				J:\1352 - Gulfco RI\risk\eco\Tables for Revisited SLERA\soil N of Marlin aug 2008.wst							
Full Precision				OFF							
Confidence Coefficient				95%							
Number of Bootstrap Operations				2000							
Result or 1/2 DL (1,1-dichloroethane)											
General Statistics											
Number of Valid Samples				19		Number of Unique Samples				19	
Raw Statistics				Log-transformed Statistics							
		Minimum	6.4000E-5			Minimum of Log Data		-9.657			
		Maximum	0.518			Maximum of Log Data		-0.658			
		Mean	0.0286			Mean of log Data		-7.963			
		Median	8.7000E-5			SD of log Data		2.504			
		SD	0.119								
		Coefficient of Variation	4.147								
		Skewness	4.355								
Relevant UCL Statistics											
Normal Distribution Test				Lognormal Distribution Test							
		Shapiro Wilk Test Statistic	0.258			Shapiro Wilk Test Statistic		0.689			
		Shapiro Wilk Critical Value	0.901			Shapiro Wilk Critical Value		0.901			
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level							
Assuming Normal Distribution				Assuming Lognormal Distribution							
		95% Student's-t UCL	0.0757			95% H-UCL		0.172			
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL		0.0196			
		95% Adjusted-CLT UCL	0.102			97.5% Chebyshev (MVUE) UCL		0.026			
		95% Modified-t UCL	0.0803			99% Chebyshev (MVUE) UCL		0.0385			
Gamma Distribution Test				Data Distribution							
		k star (bias corrected)	0.179			Data do not follow a Discernable Distribution (0.05)					
		Theta Star	0.16								
		nu star	6.805								
Approximate Chi Square Value (.05)				2.064		Nonparametric Statistics					
		Adjusted Level of Significance	0.0369			95% CLT UCL		0.0733			
		Adjusted Chi Square Value	1.844			95% Jackknife UCL		0.0757			
						95% Standard Bootstrap UCL		0.0709			
		Anderson-Darling Test Statistic	4.123			95% Bootstrap-t UCL		2.611			
		Anderson-Darling 5% Critical Value	0.899			95% Hall's Bootstrap UCL		1.441			
		Kolmogorov-Smirnov Test Statistic	0.386			95% Percentile Bootstrap UCL		0.0826			
		Kolmogorov-Smirnov 5% Critical Value	0.221			95% BCA Bootstrap UCL		0.111			
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL		0.147			
						97.5% Chebyshev(Mean, Sd) UCL		0.198			
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL		0.299			
		95% Approximate Gamma UCL	0.0942								
		95% Adjusted Gamma UCL	0.105								

Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL				0.299					
Result or 1/2 DL (1,1-dichloroethene)													
General Statistics													
Number of Valid Samples				19		Number of Unique Samples				19			
Raw Statistics					Log-transformed Statistics								
			Minimum		1.4500E-4					Minimum of Log Data		-8.839	
			Maximum		0.313					Maximum of Log Data		-1.162	
			Mean		0.0179					Mean of log Data		-7.528	
			Median		1.9050E-4					SD of log Data		2.12	
			SD		0.0715								
			Coefficient of Variation		3.989								
			Skewness		4.348								
Relevant UCL Statistics													
Normal Distribution Test					Lognormal Distribution Test								
			Shapiro Wilk Test Statistic		0.267					Shapiro Wilk Test Statistic		0.64	
			Shapiro Wilk Critical Value		0.901					Shapiro Wilk Critical Value		0.901	
Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level								
Assuming Normal Distribution					Assuming Lognormal Distribution								
			95% Student's-t UCL		0.0464					95% H-UCL		0.0481	
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					0.0135			
			95% Adjusted-CLT UCL		0.0624					97.5% Chebyshev (MVUE) UCL		0.0177	
			95% Modified-t UCL		0.0491					99% Chebyshev (MVUE) UCL		0.026	
Gamma Distribution Test					Data Distribution								
			k star (bias corrected)		0.211		Data do not follow a Discernable Distribution (0.05)						
			Theta Star		0.0851								
			nu star		8.005								
Approximate Chi Square Value (.05)					2.738		Nonparametric Statistics						
			Adjusted Level of Significance		0.0369					95% CLT UCL		0.0449	
			Adjusted Chi Square Value		2.476					95% Jackknife UCL		0.0464	
										95% Standard Bootstrap UCL		0.0439	
			Anderson-Darling Test Statistic		4.354					95% Bootstrap-t UCL		0.671	
			Anderson-Darling 5% Critical Value		0.884					95% Hall's Bootstrap UCL		0.399	
			Kolmogorov-Smirnov Test Statistic		0.427					95% Percentile Bootstrap UCL		0.0504	
			Kolmogorov-Smirnov 5% Critical Value		0.219					95% BCA Bootstrap UCL		0.0673	
Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					0.0894			
										97.5% Chebyshev(Mean, Sd) UCL		0.12	
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					0.181			
			95% Approximate Gamma UCL		0.0524								
			95% Adjusted Gamma UCL		0.058								
Potential UCL to Use					Use 99% Chebyshev (Mean, Sd) UCL					0.181			
Result or 1/2 DL (1,2-dichloroethane)													

General Statistics						
Number of Valid Samples		19	Number of Unique Samples		18	
Raw Statistics			Log-transformed Statistics			
	Minimum	4.6000E-5		Minimum of Log Data	-9.987	
	Maximum	0.177		Maximum of Log Data	-1.732	
	Mean	0.0106		Mean of log Data	-8.083	
	Median	6.2500E-5		SD of log Data	2.49	
	SD	0.0404				
	Coefficient of Variation	3.799				
	Skewness	4.329				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.282		Shapiro Wilk Test Statistic	0.741	
	Shapiro Wilk Critical Value	0.901		Shapiro Wilk Critical Value	0.901	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0267		95% H-UCL	0.143	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0169	
	95% Adjusted-CLT UCL	0.0357		97.5% Chebyshev (MVUE) UCL	0.0223	
	95% Modified-t UCL	0.0282		99% Chebyshev (MVUE) UCL	0.0331	
Gamma Distribution Test			Data Distribution			
	k star (bias corrected)	0.209	Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0508				
	nu star	7.952				
Approximate Chi Square Value (.05)			Nonparametric Statistics			
	Adjusted Level of Significance	0.0369		95% CLT UCL	0.0259	
	Adjusted Chi Square Value	2.447		95% Jackknife UCL	0.0267	
				95% Standard Bootstrap UCL	0.0255	
	Anderson-Darling Test Statistic	3.162		95% Bootstrap-t UCL	0.349	
	Anderson-Darling 5% Critical Value	0.885		95% Hall's Bootstrap UCL	0.153	
	Kolmogorov-Smirnov Test Statistic	0.358		95% Percentile Bootstrap UCL	0.0291	
	Kolmogorov-Smirnov 5% Critical Value	0.22		95% BCA Bootstrap UCL	0.0389	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.051	
				97.5% Chebyshev(Mean, Sd) UCL	0.0685	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.103	
	95% Approximate Gamma UCL	0.0312				
	95% Adjusted Gamma UCL	0.0345				
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL			0.103

Result or 1/2 DL (2-butanone)

General Statistics						
Number of Valid Samples		19	Number of Unique Samples		19	
Raw Statistics			Log-transformed Statistics			
Minimum			1.2600E-4	Minimum of Log Data		-8.979

Maximum	0.208	Maximum of Log Data	-1.57
Mean	0.0139	Mean of log Data	-6.223
Median	0.0029	SD of log Data	1.907
SD	0.0471		
Coefficient of Variation	3.378		
Skewness	4.338		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.288	Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0327	95% H-UCL	0.0777
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0326
95% Adjusted-CLT UCL	0.0432	97.5% Chebyshev (MVUE) UCL	0.0424
95% Modified-t UCL	0.0344	99% Chebyshev (MVUE) UCL	0.0618
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.326	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0427		
nu star	12.4		
Approximate Chi Square Value (.05)	5.488	Nonparametric Statistics	
Adjusted Level of Significance	0.0369	95% CLT UCL	0.0317
Adjusted Chi Square Value	5.091	95% Jackknife UCL	0.0327
		95% Standard Bootstrap UCL	0.0315
Anderson-Darling Test Statistic	2.196	95% Bootstrap-t UCL	0.25
Anderson-Darling 5% Critical Value	0.834	95% Hall's Bootstrap UCL	0.129
Kolmogorov-Smirnov Test Statistic	0.356	95% Percentile Bootstrap UCL	0.0353
Kolmogorov-Smirnov 5% Critical Value	0.214	95% BCA Bootstrap UCL	0.0466
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.061
		97.5% Chebyshev(Mean, Sd) UCL	0.0814
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.121
95% Approximate Gamma UCL	0.0315		
95% Adjusted Gamma UCL	0.0339		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.121

Result or 1/2 DL (2-methylnaphthalene)

General Statistics

Number of Valid Samples	36	Number of Unique Samples	19
Raw Statistics		Log-transformed Statistics	
Minimum	0.005	Minimum of Log Data	-5.298
Maximum	0.053	Maximum of Log Data	-2.937
Mean	0.0103	Mean of log Data	-4.915
Median	0.0059	SD of log Data	0.663
SD	0.0131		
Coefficient of Variation	1.267		

Skewness		2.781	
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.416	Shapiro Wilk Test Statistic	0.497
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.014	95% H-UCL	0.0115
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0138
95% Adjusted-CLT UCL	0.015	97.5% Chebyshev (MVUE) UCL	0.0158
95% Modified-t UCL	0.0142	99% Chebyshev (MVUE) UCL	0.0198
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.491	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0069		
nu star	107.3		
Approximate Chi Square Value (.05)	84.44	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0139
Adjusted Chi Square Value	83.51	95% Jackknife UCL	0.014
		95% Standard Bootstrap UCL	0.0138
Anderson-Darling Test Statistic	9.26	95% Bootstrap-t UCL	0.0166
Anderson-Darling 5% Critical Value	0.765	95% Hall's Bootstrap UCL	0.0135
Kolmogorov-Smirnov Test Statistic	0.468	95% Percentile Bootstrap UCL	0.0141
Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	0.0152
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0198
		97.5% Chebyshev(Mean, Sd) UCL	0.024
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.032
95% Approximate Gamma UCL	0.0131		
95% Adjusted Gamma UCL	0.0133		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0198

Result or 1/2 DL (4,4'-dde)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	31
Raw Statistics		Log-transformed Statistics	
Minimum	1.8950E-4	Minimum of Log Data	-8.571
Maximum	0.0149	Maximum of Log Data	-4.206
Mean	7.0636E-4	Mean of log Data	-8.216
Median	2.1150E-4	SD of log Data	0.842
SD	0.0024		
Coefficient of Variation	3.483		
Skewness	5.808		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.222	Shapiro Wilk Test Statistic	0.415

Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.0014		95% H-UCL	5.2862E-4	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	6.4086E-4	
95% Adjusted-CLT UCL	0.0018		97.5% Chebyshev (MVUE) UCL	7.5362E-4	
95% Modified-t UCL	0.0014		99% Chebyshev (MVUE) UCL	9.7511E-4	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	0.603		Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0011				
nu star	43.4				
Approximate Chi Square Value (.05)	29.29		Nonparametric Statistics		
Adjusted Level of Significance	0.0428		95% CLT UCL	0.0013	
Adjusted Chi Square Value	28.77		95% Jackknife UCL	0.0014	
			95% Standard Bootstrap UCL	0.0013	
Anderson-Darling Test Statistic	10.81		95% Bootstrap-t UCL	0.0475	
Anderson-Darling 5% Critical Value	0.799		95% Hall's Bootstrap UCL	0.0081	
Kolmogorov-Smirnov Test Statistic	0.505		95% Percentile Bootstrap UCL	0.0015	
Kolmogorov-Smirnov 5% Critical Value	0.154		95% BCA Bootstrap UCL	0.0020	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0024	
			97.5% Chebyshev(Mean, Sd) UCL	0.0032	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0047	
95% Approximate Gamma UCL	0.0010				
95% Adjusted Gamma UCL	0.0010				
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL	0.0024	
Result or 1/2 DL (4,4'-ddt)					
General Statistics					
Number of Valid Samples	36		Number of Unique Samples	28	
Raw Statistics			Log-transformed Statistics		
Minimum	7.3000E-5		Minimum of Log Data	-9.525	
Maximum	0.0108		Maximum of Log Data	-4.528	
Mean	7.0422E-4		Mean of log Data	-8.523	
Median	8.3500E-5		SD of log Data	1.323	
SD	0.0019				
Coefficient of Variation	2.703				
Skewness	4.722				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.372		Shapiro Wilk Test Statistic	0.755	
Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.0012		95% H-UCL	8.9022E-4	

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

Result or 1/2 DL (acenaphthene)

General Statistics					
Number of Valid Samples		36	Number of Unique Samples		19
Raw Statistics			Log-transformed Statistics		
Minimum		0.0049	Minimum of Log Data		-5.3
Maximum		0.157	Maximum of Log Data		-1.852
Mean		0.0142	Mean of log Data		-4.898
Median		0.0055	SD of log Data		0.825
SD		0.03			
Coefficient of Variation		2.115			
Skewness		4.095			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.345	Shapiro Wilk Test Statistic		0.489
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0227	95% H-UCL		0.0143
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0173
95% Adjusted-CLT UCL		0.0261	97.5% Chebyshev (MVUE) UCL		0.0203
95% Modified-t UCL		0.0232	99% Chebyshev (MVUE) UCL		0.0262
Gamma Distribution Test			Data Distribution		

k star (bias corrected)	0.85	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0167		
nu star	61.21		
Approximate Chi Square Value (.05)	44.22	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0224
Adjusted Chi Square Value	43.56	95% Jackknife UCL	0.0227
		95% Standard Bootstrap UCL	0.0222
Anderson-Darling Test Statistic	9.363	95% Bootstrap-t UCL	0.0524
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	0.0561
Kolmogorov-Smirnov Test Statistic	0.497	95% Percentile Bootstrap UCL	0.0229
Kolmogorov-Smirnov 5% Critical Value	0.152	95% BCA Bootstrap UCL	0.0271
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.036
		97.5% Chebyshev(Mean, Sd) UCL	0.0455
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.064
95% Approximate Gamma UCL	0.0197		
95% Adjusted Gamma UCL	0.02		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.036

Result or 1/2 DL (aluminum)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	32
Raw Statistics		Log-transformed Statistics	
Minimum	1810	Minimum of Log Data	7.501
Maximum	18300	Maximum of Log Data	9.815
Mean	11971	Mean of log Data	9.317
Median	11700	SD of log Data	0.437
SD	3979		
Coefficient of Variation	0.332		
Skewness	-0.25		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Test Statistic	0.833
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13092	95% H-UCL	14053
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16219
95% Adjusted-CLT UCL	13032	97.5% Chebyshev (MVUE) UCL	17956
95% Modified-t UCL	13087	99% Chebyshev (MVUE) UCL	21367
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.424	Data appear Normal at 5% Significance Level	
Theta Star	1863		
nu star	462.6		
Approximate Chi Square Value (.05)	413.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	13062

Adjusted Chi Square Value	411.6	95% Jackknife UCL	13092
		95% Standard Bootstrap UCL	13034
Anderson-Darling Test Statistic	0.592	95% Bootstrap-t UCL	13062
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	13058
Kolmogorov-Smirnov Test Statistic	0.0919	95% Percentile Bootstrap UCL	13052
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL	13052
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14862
		97.5% Chebyshev(Mean, Sd) UCL	16113
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	18569
95% Approximate Gamma UCL	13385		
95% Adjusted Gamma UCL	13453		
Potential UCL to Use		Use 95% Student's-t UCL	13092

Result or 1/2 DL (anthracene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	24
Raw Statistics		Log-transformed Statistics	
Minimum	0.0037	Minimum of Log Data	-5.594
Maximum	-0.264	Maximum of Log Data	-1.332
Mean	0.0215	Mean of log Data	-4.761
Median	0.006	SD of log Data	1.024
SD	0.0516		
Coefficient of Variation	2.397		
Skewness	4.003		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.372	Shapiro Wilk Test Statistic	0.624
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0361	95% H-UCL	0.022
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0264
95% Adjusted-CLT UCL	0.0418	97.5% Chebyshev (MVUE) UCL	0.0317
95% Modified-t UCL	0.037	99% Chebyshev (MVUE) UCL	0.0422
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.623	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0346		
nu star	44.87		
Approximate Chi Square Value (.05)	30.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0357
Adjusted Chi Square Value	29.96	95% Jackknife UCL	0.0361
		95% Standard Bootstrap UCL	0.0361
Anderson-Darling Test Statistic	7.709	95% Bootstrap-t UCL	0.0846
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	0.0941
Kolmogorov-Smirnov Test Statistic	0.452	95% Percentile Bootstrap UCL	0.037

Kolmogorov-Smirnov 5% Critical Value		0.154	95% BCA Bootstrap UCL		0.0437
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0591
			97.5% Chebyshev(Mean, Sd) UCL		0.0753
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.107
95% Approximate Gamma UCL		0.0317			
95% Adjusted Gamma UCL		0.0323			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.107
Result or 1/2 DL (antimony)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		23
Raw Statistics			Log-transformed Statistics		
Minimum		0.095	Minimum of Log Data		-2.354
Maximum		8.09	Maximum of Log Data		2.091
Mean		1.416	Mean of log Data		-0.752
Median		0.125	SD of log Data		1.642
SD		1.779			
Coefficient of Variation		1.256			
Skewness		1.716			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.738	Shapiro Wilk Test Statistic		0.731
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		1.917	95% H-UCL		4.438
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		4.311
95% Adjusted-CLT UCL		1.994	97.5% Chebyshev (MVUE) UCL		5.452
95% Modified-t UCL		1.931	99% Chebyshev (MVUE) UCL		7.692
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.538	Data do not follow a Discernable Distribution (0.05)		
Theta Star		2.632			
nu star		38.74			
Approximate Chi Square Value (.05)		25.48	Nonparametric Statistics		
Adjusted Level of Significance		0.0428	95% CLT UCL		1.904
Adjusted Chi Square Value		25	95% Jackknife UCL		1.917
			95% Standard Bootstrap UCL		1.915
Anderson-Darling Test Statistic		4.128	95% Bootstrap-t UCL		2.065
Anderson-Darling 5% Critical Value		0.806	95% Hall's Bootstrap UCL		2.167
Kolmogorov-Smirnov Test Statistic		0.349	95% Percentile Bootstrap UCL		1.93
Kolmogorov-Smirnov 5% Critical Value		0.155	95% BCA Bootstrap UCL		2.035
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		2.708
			97.5% Chebyshev(Mean, Sd) UCL		3.267
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		4.366
95% Approximate Gamma UCL		2.152			

95% Adjusted Gamma UCL		2.195			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		4.366
Result or 1/2 DL (aroclor-1254)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		34
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0019		Minimum of Log Data	-6.269
	Maximum	0.0938		Maximum of Log Data	-2.367
	Mean	0.0056		Mean of log Data	-5.848
	Median	0.0021		SD of log Data	0.763
	SD	0.0154			
	Coefficient of Variation	2.735			
	Skewness	5.714			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.254		Shapiro Wilk Test Statistic	0.554
	Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0099		95% H-UCL	0.0050
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0061
	95% Adjusted-CLT UCL	0.0124		97.5% Chebyshev (MVUE) UCL	0.0071
	95% Modified-t UCL	0.0104		99% Chebyshev (MVUE) UCL	0.0091
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.826	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.0068			
	nu star	59.44			
	Approximate Chi Square Value (.05)	42.71	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428		95% CLT UCL	0.0098
	Adjusted Chi Square Value	42.07		95% Jackknife UCL	0.0099
				95% Standard Bootstrap UCL	0.0097
	Anderson-Darling Test Statistic	8.285		95% Bootstrap-t UCL	0.0476
	Anderson-Darling 5% Critical Value	0.782		95% Hall's Bootstrap UCL	0.0303
	Kolmogorov-Smirnov Test Statistic	0.394		95% Percentile Bootstrap UCL	0.0107
	Kolmogorov-Smirnov 5% Critical Value	0.152		95% BCA Bootstrap UCL	0.0152
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0168
				97.5% Chebyshev(Mean, Sd) UCL	0.0216
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.0311
	95% Approximate Gamma UCL	0.0078			
	95% Adjusted Gamma UCL	0.0079			
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	0.0168

Result or 1/2 DL (arsenic)

General Statistics			
Number of Valid Samples		36	
Number of Unique Samples			32
Raw Statistics		Log-transformed Statistics	
Minimum	0.105	Minimum of Log Data	-2.254
Maximum	5.69	Maximum of Log Data	1.739
Mean	2.573	Mean of log Data	0.673
Median	2.53	SD of log Data	0.969
SD	1.369		
Coefficient of Variation	0.532		
Skewness	0.256		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Test Statistic	0.732
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.959	95% H-UCL	4.613
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.572
95% Adjusted-CLT UCL	2.959	97.5% Chebyshev (MVUE) UCL	6.652
95% Modified-t UCL	2.96	99% Chebyshev (MVUE) UCL	8.772
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.84	Data appear Normal at 5% Significance Level	
Theta Star	1.399		
nu star	132.5		
Approximate Chi Square Value (.05)	106.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	2.948
Adjusted Chi Square Value	105.8	95% Jackknife UCL	2.959
		95% Standard Bootstrap UCL	2.934
Anderson-Darling Test Statistic	2.399	95% Bootstrap-t UCL	2.955
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	2.96
Kolmogorov-Smirnov Test Statistic	0.231	95% Percentile Bootstrap UCL	2.938
Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	2.961
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.567
		97.5% Chebyshev(Mean, Sd) UCL	3.998
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.843
95% Approximate Gamma UCL	3.189		
95% Adjusted Gamma UCL	3.221		
Potential UCL to Use		Use 95% Student's-t UCL	2.959

Result or 1/2 DL (barium)

General Statistics			
Number of Valid Samples		36	
Number of Unique Samples			31

Raw Statistics			Log-transformed Statistics		
	Minimum	46.1		Minimum of Log Data	3.831
	Maximum	476		Maximum of Log Data	6.165
	Mean	142.1		Mean of log Data	4.802
	Median	121		SD of log Data	0.53
	SD	95.9			
	Coefficient of Variation	0.675			
	Skewness	2.311			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.718		Shapiro Wilk Test Statistic	0.934
	Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	169.1		95% H-UCL	166.7
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	196.1
	95% Adjusted-CLT UCL	174.9		97.5% Chebyshev (MVUE) UCL	220.5
	95% Modified-t UCL	170.1		99% Chebyshev (MVUE) UCL	268.6
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	3.139	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	45.26			
	nu star	226			
	Approximate Chi Square Value (.05)	192.2	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428		95% CLT UCL	168.4
	Adjusted Chi Square Value	190.8		95% Jackknife UCL	169.1
				95% Standard Bootstrap UCL	168
	Anderson-Darling Test Statistic	1.456		95% Bootstrap-t UCL	180.8
	Anderson-Darling 5% Critical Value	0.753		95% Hall's Bootstrap UCL	182.1
	Kolmogorov-Smirnov Test Statistic	0.199		95% Percentile Bootstrap UCL	168.2
	Kolmogorov-Smirnov 5% Critical Value	0.148		95% BCA Bootstrap UCL	175.1
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	211.7
				97.5% Chebyshev(Mean, Sd) UCL	241.9
				99% Chebyshev(Mean, Sd) UCL	301.1
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	167.1			
	95% Adjusted Gamma UCL	168.3			
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL	211.7

Result or 1/2 DL (benzo(a)anthracene)

General Statistics					
	Number of Valid Samples	36		Number of Unique Samples	25
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0025		Minimum of Log Data	-5.985
	Maximum	1.18		Maximum of Log Data	0.166
	Mean	0.068		Mean of log Data	-4.862
	Median	0.0055		SD of log Data	1.45

SD		0.239		
Coefficient of Variation		3.512		
Skewness		4.117		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic		0.304	Shapiro Wilk Test Statistic 0.587	
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value 0.935	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL		0.135	95% H-UCL 0.0457	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL 0.049	
95% Adjusted-CLT UCL		0.163	97.5% Chebyshev (MVUE) UCL 0.0612	
95% Modified-t UCL		0.14	99% Chebyshev (MVUE) UCL 0.085	
Gamma Distribution Test			Data Distribution	
k star (bias corrected)		0.307	Data do not follow a Discernable Distribution (0.05)	
Theta Star		0.222		
nu star		22.1		
Approximate Chi Square Value (.05)		12.41	Nonparametric Statistics	
Adjusted Level of Significance		0.0428	95% CLT UCL 0.134	
Adjusted Chi Square Value		12.08	95% Jackknife UCL 0.135	
			95% Standard Bootstrap UCL 0.133	
Anderson-Darling Test Statistic		9.41	95% Bootstrap-t UCL 0.491	
Anderson-Darling 5% Critical Value		0.853	95% Hall's Bootstrap UCL 0.61	
Kolmogorov-Smirnov Test Statistic		0.502	95% Percentile Bootstrap UCL 0.137	
Kolmogorov-Smirnov 5% Critical Value		0.159	95% BCA Bootstrap UCL 0.176	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL 0.242	
			97.5% Chebyshev(Mean, Sd) UCL 0.317	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL 0.464	
95% Approximate Gamma UCL		0.121		
95% Adjusted Gamma UCL		0.124		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL 0.464	
Result or 1/2 DL (benzo(a)pyrene)				
General Statistics				
Number of Valid Samples		36	Number of Unique Samples 28	
Raw Statistics			Log-transformed Statistics	
Minimum		0.0045	Minimum of Log Data -5.403	
Maximum		1.42	Maximum of Log Data 0.351	
Mean		0.0922	Mean of log Data -4.333	
Median		0.0056	SD of log Data 1.62	
SD		0.278		
Coefficient of Variation		3.017		
Skewness		4.117		
Relevant UCL Statistics				

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.361		Shapiro Wilk Test Statistic		0.651	
Shapiro Wilk Critical Value		0.935		Shapiro Wilk Critical Value		0.935	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.171		95% H-UCL		0.117	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.115	
95% Adjusted-CLT UCL		0.203		97.5% Chebyshev (MVUE) UCL		0.145	
95% Modified-t UCL		0.176		99% Chebyshev (MVUE) UCL		0.205	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.335		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.275					
nu star		24.15					
Approximate Chi Square Value (.05)		13.96		Nonparametric Statistics			
Adjusted Level of Significance		0.0428		95% CLT UCL		0.169	
Adjusted Chi Square Value		13.61		95% Jackknife UCL		0.171	
				95% Standard Bootstrap UCL		0.168	
Anderson-Darling Test Statistic		6.99		95% Bootstrap-t UCL		0.5	
Anderson-Darling 5% Critical Value		0.847		95% Hall's Bootstrap UCL		0.495	
Kolmogorov-Smirnov Test Statistic		0.422		95% Percentile Bootstrap UCL		0.175	
Kolmogorov-Smirnov 5% Critical Value		0.158		95% BCA Bootstrap UCL		0.217	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.294	
				97.5% Chebyshev(Mean, Sd) UCL		0.382	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.554	
95% Approximate Gamma UCL		0.16					
95% Adjusted Gamma UCL		0.164					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.554	

Result or 1/2 DL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples		36	
Number of Unique Samples			32
Raw Statistics		Log-transformed Statistics	
Minimum	0.0036	Minimum of Log Data	-5.625
Maximum	1.62	Maximum of Log Data	0.482
Mean	0.12	Mean of log Data	-4.074
Median	0.0062	SD of log Data	1.886
SD	0.319		
Coefficient of Variation	2.649		
Skewness	3.981		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		0.412	
Shapiro Wilk Critical Value		0.935	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.21		95% H-UCL		0.315	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			
95% Adjusted-CLT UCL		0.245		97.5% Chebyshev (MVUE) UCL		0.329	
95% Modified-t UCL		0.216		99% Chebyshev (MVUE) UCL		0.471	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.334		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.36					
nu star		24.08					
Approximate Chi Square Value (.05)		13.91		Nonparametric Statistics			
Adjusted Level of Significance		0.0428		95% CLT UCL		0.208	
Adjusted Chi Square Value		13.56		95% Jackknife UCL		0.21	
				95% Standard Bootstrap UCL		0.207	
Anderson-Darling Test Statistic		4.213		95% Bootstrap-t UCL		0.469	
Anderson-Darling 5% Critical Value		0.847		95% Hall's Bootstrap UCL		0.615	
Kolmogorov-Smirnov Test Statistic		0.321		95% Percentile Bootstrap UCL		0.214	
Kolmogorov-Smirnov 5% Critical Value		0.158		95% BCA Bootstrap UCL		0.267	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.352	
				97.5% Chebyshev(Mean, Sd) UCL		0.452	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.649	
95% Approximate Gamma UCL		0.208					
95% Adjusted Gamma UCL		0.214					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.649	

Result or 1/2 DL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples		36	Number of Unique Samples 29
Raw Statistics		Log-transformed Statistics	
Minimum	0.0046	Minimum of Log Data	-5.368
Maximum	1.28	Maximum of Log Data	0.247
Mean	0.0961	Mean of log Data	-4.016
Median	0.0058	SD of log Data	1.685
SD	0.24		
Coefficient of Variation	2.497		
Skewness	4.019		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.442	Shapiro Wilk Test Statistic	0.756
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	0.19
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.18
95% Adjusted-CLT UCL		97.5% Chebyshev (MVUE) UCL	0.228
95% Modified-t UCL		99% Chebyshev (MVUE) UCL	0.323

Gamma Distribution Test				Data Distribution	
k star (bias corrected)	0.38	Data do not follow a Discernable Distribution (0.05)			
Theta Star	0.253				
nu star	27.35				
Approximate Chi Square Value (.05)	16.42	Nonparametric Statistics			
Adjusted Level of Significance	0.0428	95% CLT UCL		0.162	
Adjusted Chi Square Value	16.03	95% Jackknife UCL		0.164	
		95% Standard Bootstrap UCL		0.162	
Anderson-Darling Test Statistic	4.565	95% Bootstrap-t UCL		0.284	
Anderson-Darling 5% Critical Value	0.836	95% Hall's Bootstrap UCL		0.403	
Kolmogorov-Smirnov Test Statistic	0.351	95% Percentile Bootstrap UCL		0.173	
Kolmogorov-Smirnov 5% Critical Value	0.157	95% BCA Bootstrap UCL		0.206	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.27	
		97.5% Chebyshev(Mean, Sd) UCL		0.346	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.494	
95% Approximate Gamma UCL	0.16				
95% Adjusted Gamma UCL	0.164				
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.494	

Result or 1/2 DL (benzo(k)fluoranthene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	25
Raw Statistics		Log-transformed Statistics	
Minimum	0.0055	Minimum of Log Data	-5.203
Maximum	0.799	Maximum of Log Data	-0.224
Mean	0.0601	Mean of log Data	-4.26
Median	0.0085	SD of log Data	1.298
SD	0.169		
Coefficient of Variation	2.819		
Skewness	3.875		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.357	Shapiro Wilk Test Statistic	0.62
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.108	95% H-UCL	0.06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0682
95% Adjusted-CLT UCL	0.126	97.5% Chebyshev (MVUE) UCL	0.0841
95% Modified-t UCL	0.111	99% Chebyshev (MVUE) UCL	0.115
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.428	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.141		
nu star	30.79		

Approximate Chi Square Value (.05)	19.12	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.107
Adjusted Chi Square Value	18.7	95% Jackknife UCL	0.108
		95% Standard Bootstrap UCL	0.104
Anderson-Darling Test Statistic	7.875	95% Bootstrap-t UCL	0.283
Anderson-Darling 5% Critical Value	0.824	95% Hall's Bootstrap UCL	0.309
Kolmogorov-Smirnov Test Statistic	0.467	95% Percentile Bootstrap UCL	0.106
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	0.13
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.183
		97.5% Chebyshev(Mean, Sd) UCL	0.236
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.341
95% Approximate Gamma UCL	0.0968		
95% Adjusted Gamma UCL	0.099		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.341

Result or 1/2 DL (beryllium)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	28
Raw Statistics		Log-transformed Statistics	
Minimum	0.013	Minimum of Log Data	-4.343
Maximum	2.88	Maximum of Log Data	1.058
Mean	0.752	Mean of log Data	-0.509
Median	0.695	SD of log Data	0.881
SD	0.461		
Coefficient of Variation	0.613		
Skewness	2.77		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.759	Shapiro Wilk Test Statistic	0.702
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.882	95% H-UCL	1.24
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.503
95% Adjusted-CLT UCL	0.916	97.5% Chebyshev (MVUE) UCL	1.776
95% Modified-t UCL	0.888	99% Chebyshev (MVUE) UCL	2.312
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.199	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.342		
nu star	158.3		
Approximate Chi Square Value (.05)	130.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.879
Adjusted Chi Square Value	129.1	95% Jackknife UCL	0.882
		95% Standard Bootstrap UCL	0.874
Anderson-Darling Test Statistic	2.229	95% Bootstrap-t UCL	0.94

Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	1.53
Kolmogorov-Smirnov Test Statistic	0.204	95% Percentile Bootstrap UCL	0.885
Kolmogorov-Smirnov 5% Critical Value	0.148	95% BCA Bootstrap UCL	0.921
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.087
		97.5% Chebyshev(Mean, Sd) UCL	1.232
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.516
95% Approximate Gamma UCL	0.914		
95% Adjusted Gamma UCL	0.923		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.087

Result or 1/2 DL (bis(2-ethylhexyl)phthalate)

General Statistics			
Number of Valid Samples		36	
		Number of Unique Samples	34
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	0.239	Maximum of Log Data	-1.431
Mean	0.0428	Mean of log Data	-3.438
Median	0.0282	SD of log Data	0.703
SD	0.0446		
Coefficient of Variation	1.041		
Skewness	3.194		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.598	Shapiro Wilk Test Statistic	0.925
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0554	95% H-UCL	0.0527
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0635
95% Adjusted-CLT UCL	0.0593	97.5% Chebyshev (MVUE) UCL	0.0733
95% Modified-t UCL	0.0561	99% Chebyshev (MVUE) UCL	0.0926

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.75	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0245		
nu star	126		
Approximate Chi Square Value (.05)	101.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0551
Adjusted Chi Square Value	100.1	95% Jackknife UCL	0.0554
		95% Standard Bootstrap UCL	0.0548
Anderson-Darling Test Statistic	2.221	95% Bootstrap-t UCL	0.0674
Anderson-Darling 5% Critical Value	0.761	95% Hall's Bootstrap UCL	0.0691
Kolmogorov-Smirnov Test Statistic	0.22	95% Percentile Bootstrap UCL	0.0562
Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	0.0599
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0753
		97.5% Chebyshev(Mean, Sd) UCL	0.0893

Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.117
95% Approximate Gamma UCL		0.0534				
95% Adjusted Gamma UCL		0.054				
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		0.0753	
Result or 1/2 DL (boron)						
General Statistics						
Number of Valid Samples		36	Number of Unique Samples		35	
Raw Statistics			Log-transformed Statistics			
Minimum		0.555	Minimum of Log Data		-0.589	
Maximum		39.2	Maximum of Log Data		3.669	
Mean		7.576	Mean of log Data		1.383	
Median		5.27	SD of log Data		1.32	
SD		7.826				
Coefficient of Variation		1.033				
Skewness		2.044				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.801	Shapiro Wilk Test Statistic		0.863	
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		9.779	95% H-UCL		17.75	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		20.02	
95% Adjusted-CLT UCL		10.2	97.5% Chebyshev (MVUE) UCL		24.73	
95% Modified-t UCL		9.853	99% Chebyshev (MVUE) UCL		33.99	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.852	Data do not follow a Discernable Distribution (0.05)			
Theta Star		8.892				
nu star		61.34				
Approximate Chi Square Value (.05)		44.33	Nonparametric Statistics			
Adjusted Level of Significance		0.0428	95% CLT UCL		9.721	
Adjusted Chi Square Value		43.67	95% Jackknife UCL		9.779	
			95% Standard Bootstrap UCL		9.629	
Anderson-Darling Test Statistic		1.037	95% Bootstrap-t UCL		10.46	
Anderson-Darling 5% Critical Value		0.781	95% Hall's Bootstrap UCL		10.98	
Kolmogorov-Smirnov Test Statistic		0.18	95% Percentile Bootstrap UCL		9.74	
Kolmogorov-Smirnov 5% Critical Value		0.152	95% BCA Bootstrap UCL		10.28	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		13.26	
			97.5% Chebyshev(Mean, Sd) UCL		15.72	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		20.55	
95% Approximate Gamma UCL		10.48				
95% Adjusted Gamma UCL		10.64				
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		20.55	

Result or 1/2 DL (bromoform)			
General Statistics			
Number of Valid Samples		19	
Number of Unique Samples		19	
Raw Statistics		Log-transformed Statistics	
Minimum	6.8500E-5	Minimum of Log Data	-9.589
Maximum	0.018	Maximum of Log Data	-4.017
Mean	0.0023	Mean of log Data	-8.057
Median	9.2500E-5	SD of log Data	2.053
SD	0.0046		
Coefficient of Variation	1.992		
Skewness	2.642		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.687
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0042	95% H-UCL	0.0217
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0069
95% Adjusted-CLT UCL	0.0048	97.5% Chebyshev (MVUE) UCL	0.0091
95% Modified-t UCL	0.0043	99% Chebyshev (MVUE) UCL	0.0133
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.32	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0073		
nu star	12.14		
Approximate Chi Square Value (.05)	5.322	Nonparametric Statistics	
Adjusted Level of Significance	0.0369	95% CLT UCL	0.0041
Adjusted Chi Square Value	4.931	95% Jackknife UCL	0.0042
		95% Standard Bootstrap UCL	0.0040
Anderson-Darling Test Statistic	2.937	95% Bootstrap-t UCL	0.0072
Anderson-Darling 5% Critical Value	0.835	95% Hall's Bootstrap UCL	0.0119
Kolmogorov-Smirnov Test Statistic	0.421	95% Percentile Bootstrap UCL	0.0042
Kolmogorov-Smirnov 5% Critical Value	0.214	95% BCA Bootstrap UCL	0.0049
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0070
		97.5% Chebyshev(Mean, Sd) UCL	0.0090
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.013
95% Approximate Gamma UCL	0.0053		
95% Adjusted Gamma UCL	0.0057		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.013

Result or 1/2 DL (butyl benzyl phthalate)

General Statistics

Number of Valid Samples		36	Number of Unique Samples		29
Raw Statistics			Log-transformed Statistics		
Minimum	0.0045	Minimum of Log Data	-5.389		
Maximum	0.151	Maximum of Log Data	-1.89		
Mean	0.0125	Mean of log Data	-4.877		
Median	0.0067	SD of log Data	0.703		
SD	0.0255				
Coefficient of Variation	2.039				
Skewness	4.982				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Shapiro Wilk Test Statistic	0.307	Shapiro Wilk Test Statistic	0.519		
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
95% Student's-t UCL	0.0197	95% H-UCL	0.0125		
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.015		
95% Adjusted-CLT UCL	0.0233	97.5% Chebyshev (MVUE) UCL	0.0174		
95% Modified-t UCL	0.0203	99% Chebyshev (MVUE) UCL	0.0219		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	1.069	Data do not follow a Discernable Distribution (0.05)			
Theta Star	0.0117				
nu star	76.97				
Approximate Chi Square Value (.05)	57.76	Nonparametric Statistics			
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0195		
Adjusted Chi Square Value	57	95% Jackknife UCL	0.0197		
		95% Standard Bootstrap UCL	0.0194		
Anderson-Darling Test Statistic	8.924	95% Bootstrap-t UCL	0.0398		
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	0.0422		
Kolmogorov-Smirnov Test Statistic	0.488	95% Percentile Bootstrap UCL	0.0203		
Kolmogorov-Smirnov 5% Critical Value	0.151	95% BCA Bootstrap UCL	0.0245		
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.031		
		97.5% Chebyshev(Mean, Sd) UCL	0.0391		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0548		
95% Approximate Gamma UCL	0.0167				
95% Adjusted Gamma UCL	0.0169				
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.031		

Result or 1/2 DL (cadmium)

General Statistics							
Number of Valid Samples			36	Number of Unique Samples			26
Raw Statistics				Log-transformed Statistics			
Minimum		0.003		Minimum of Log Data		-5.809	
Maximum		0.8		Maximum of Log Data		-0.223	

Mean	0.193	Mean of log Data	-3.263
Median	0.0105	SD of log Data	2.139
SD	0.239		
Coefficient of Variation	1.24		
Skewness	0.849		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.786
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.26	95% H-UCL	1.572
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.004
95% Adjusted-CLT UCL	0.265	97.5% Chebyshev (MVUE) UCL	1.302
95% Modified-t UCL	0.261	99% Chebyshev (MVUE) UCL	1.887
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.39	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.494		
nu star	28.11		
Approximate Chi Square Value (.05)	17.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.259
Adjusted Chi Square Value	16.62	95% Jackknife UCL	0.26
		95% Standard Bootstrap UCL	0.257
Anderson-Darling Test Statistic	3.561	95% Bootstrap-t UCL	0.269
Anderson-Darling 5% Critical Value	0.833	95% Hall's Bootstrap UCL	0.264
Kolmogorov-Smirnov Test Statistic	0.313	95% Percentile Bootstrap UCL	0.261
Kolmogorov-Smirnov 5% Critical Value	0.157	95% BCA Bootstrap UCL	0.262
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.367
		97.5% Chebyshev(Mean, Sd) UCL	0.442
		99% Chebyshev(Mean, Sd) UCL	0.59
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.319		
95% Adjusted Gamma UCL	0.326		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.59

Result or 1/2 DL (carbon disulfide)

General Statistics

Number of Valid Samples	19	Number of Unique Samples	19
Raw Statistics		Log-transformed Statistics	
Minimum	4.4000E-5	Minimum of Log Data	-10.03
Maximum	0.0284	Maximum of Log Data	-3.561
Mean	0.0028	Mean of log Data	-8.197
Median	5.8000E-5	SD of log Data	2.3
SD	0.0066		
Coefficient of Variation	2.34		
Skewness	3.51		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.478	Shapiro Wilk Test Statistic	0.733
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0054	95% H-UCL	0.0531
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.01
95% Adjusted-CLT UCL	0.0066	97.5% Chebyshev (MVUE) UCL	0.0132
95% Modified-t UCL	0.0057	99% Chebyshev (MVUE) UCL	0.0195
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.284	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.01		
nu star	10.8		
Approximate Chi Square Value (.05)	4.45	Nonparametric Statistics	
Adjusted Level of Significance	0.0369	95% CLT UCL	0.0053
Adjusted Chi Square Value	4.098	95% Jackknife UCL	0.0054
		95% Standard Bootstrap UCL	0.0051
Anderson-Darling Test Statistic	2.428	95% Bootstrap-t UCL	0.0102
Anderson-Darling 5% Critical Value	0.845	95% Hall's Bootstrap UCL	0.0129
Kolmogorov-Smirnov Test Statistic	0.384	95% Percentile Bootstrap UCL	0.0055
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0075
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0095
		97.5% Chebyshev(Mean, Sd) UCL	0.0124
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.018
95% Approximate Gamma UCL	0.0069		
95% Adjusted Gamma UCL	0.0075		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.018

Result or 1/2 DL (chromium)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	33
Raw Statistics		Log-transformed Statistics	
Minimum	7.76	Minimum of Log Data	2.049
Maximum	128	Maximum of Log Data	4.852
Mean	17.17	Mean of log Data	2.651
Median	12.8	SD of log Data	0.489
SD	19.6		
Coefficient of Variation	1.142		
Skewness	5.455		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.365	Shapiro Wilk Test Statistic	0.777
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		22.69		95% H-UCL		18.7	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		21.82	
95% Adjusted-CLT UCL		25.72		97.5% Chebyshev (MVUE) UCL		24.38	
95% Modified-t UCL		23.18		99% Chebyshev (MVUE) UCL		29.4	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		2.545		Data do not follow a Discernable Distribution (0.05)			
Theta Star		6.745					
nu star		183.3					
Approximate Chi Square Value (.05)		153		Nonparametric Statistics			
Adjusted Level of Significance		0.0428		95% CLT UCL		22.54	
Adjusted Chi Square Value		151.7		95% Jackknife UCL		22.69	
				95% Standard Bootstrap UCL		22.43	
Anderson-Darling Test Statistic		3.618		95% Bootstrap-t UCL		37.28	
Anderson-Darling 5% Critical Value		0.755		95% Hall's Bootstrap UCL		43.24	
Kolmogorov-Smirnov Test Statistic		0.223		95% Percentile Bootstrap UCL		23.43	
Kolmogorov-Smirnov 5% Critical Value		0.148		95% BCA Bootstrap UCL		27.01	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		31.41	
				97.5% Chebyshev(Mean, Sd) UCL		37.57	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL			
95% Approximate Gamma UCL		20.57					
95% Adjusted Gamma UCL		20.74					
Potential UCL to Use				Use 95% Student's-t UCL		22.69	
				or 95% Modified-t UCL		23.18	

Result or 1/2 DL (chrysene)

General Statistics			
Number of Valid Samples		36	Number of Unique Samples
			33
Raw Statistics		Log-transformed Statistics	
Minimum	0.0040	Minimum of Log Data	-5.502
Maximum	1.3	Maximum of Log Data	0.262
Mean	0.0885	Mean of log Data	-4.382
Median	0.0050	SD of log Data	1.633
SD	0.265		
Coefficient of Variation	3.001		
Skewness	3.989		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.361	Shapiro Wilk Test Statistic	0.683
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.163	95% H-UCL	0.115

95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.112
95% Adjusted-CLT UCL	0.193	97.5% Chebyshev (MVUE) UCL		0.142		
95% Modified-t UCL	0.168	99% Chebyshev (MVUE) UCL		0.2		

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.334	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.265		
nu star	24.07		
Approximate Chi Square Value (.05)	13.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.161
Adjusted Chi Square Value	13.55	95% Jackknife UCL	0.163
		95% Standard Bootstrap UCL	0.163
Anderson-Darling Test Statistic	6.548	95% Bootstrap-t UCL	0.475
Anderson-Darling 5% Critical Value	0.847	95% Hall's Bootstrap UCL	0.489
Kolmogorov-Smirnov Test Statistic	0.37	95% Percentile Bootstrap UCL	0.166
Kolmogorov-Smirnov 5% Critical Value	0.158	95% BCA Bootstrap UCL	0.204
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.281
		97.5% Chebyshev(Mean, Sd) UCL	0.365
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.529
95% Approximate Gamma UCL	0.153		
95% Adjusted Gamma UCL	0.157		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.529

Result or 1/2 DL (cis-1,2-dichloroethene)

General Statistics					
Number of Valid Samples		19	Number of Unique Samples		19
Raw Statistics			Log-transformed Statistics		
Minimum	5.1000E-5		Minimum of Log Data	-9.884	
Maximum	0.999		Maximum of Log Data	-0.001	
Mean	0.0541		Mean of log Data	-8.276	
Median	6.7000E-5		SD of log Data	2.711	
SD	0.229				
Coefficient of Variation	4.232				
Skewness	4.356				

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.253	Shapiro Wilk Test Statistic		0.631
Shapiro Wilk Critical Value		0.901	Shapiro Wilk Critical Value		0.901
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.145	95% H-UCL		0.356
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0226
95% Adjusted-CLT UCL		0.197	97.5% Chebyshev (MVUE) UCL		0.03
95% Modified-t UCL		0.154	99% Chebyshev (MVUE) UCL		0.0446
Gamma Distribution Test			Data Distribution		

k star (bias corrected)		0.157	Data do not follow a Discernable Distribution (0.05)	
Theta Star		0.345		
nu star		5.949		
Approximate Chi Square Value (.05)		1.614	Nonparametric Statistics	
Adjusted Level of Significance		0.0369	95% CLT UCL	0.14
Adjusted Chi Square Value		1.426	95% Jackknife UCL	0.145
			95% Standard Bootstrap UCL	0.138
Anderson-Darling Test Statistic		4.69	95% Bootstrap-t UCL	12.24
Anderson-Darling 5% Critical Value		0.908	95% Hall's Bootstrap UCL	7.38
Kolmogorov-Smirnov Test Statistic		0.426	95% Percentile Bootstrap UCL	0.159
Kolmogorov-Smirnov 5% Critical Value		0.222	95% BCA Bootstrap UCL	0.213
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.283
			97.5% Chebyshev(Mean, Sd) UCL	0.382
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.577
95% Approximate Gamma UCL		0.199		
95% Adjusted Gamma UCL		0.226		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	0.577
Result or 1/2 DL (cobalt)				
General Statistics				
Number of Valid Samples		36	Number of Unique Samples 36	
Raw Statistics			Log-transformed Statistics	
Minimum		2.81	Minimum of Log Data	1.033
Maximum		10.3	Maximum of Log Data	2.332
Mean		6.318	Mean of log Data	1.803
Median		6.115	SD of log Data	0.3
SD		1.743		
Coefficient of Variation		0.276		
Skewness		0.102		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic		0.982	Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value	0.935
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL		6.808	95% H-UCL	6.944
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	7.739
95% Adjusted-CLT UCL		6.801	97.5% Chebyshev (MVUE) UCL	8.346
95% Modified-t UCL		6.809	99% Chebyshev (MVUE) UCL	9.538
Gamma Distribution Test			Data Distribution	
k star (bias corrected)		11.41	Data appear Normal at 5% Significance Level	
Theta Star		0.553		
nu star		821.8		
Approximate Chi Square Value (.05)		756.3	Nonparametric Statistics	
Adjusted Level of Significance		0.0428	95% CLT UCL	6.795

Adjusted Chi Square Value	753.4	95% Jackknife UCL	6.808
		95% Standard Bootstrap UCL	6.782
Anderson-Darling Test Statistic	0.303	95% Bootstrap-t UCL	6.811
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	6.819
Kolmogorov-Smirnov Test Statistic	0.0941	95% Percentile Bootstrap UCL	6.799
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL	6.809
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.584
		97.5% Chebyshev(Mean, Sd) UCL	8.132
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.208
95% Approximate Gamma UCL	6.865		
95% Adjusted Gamma UCL	6.891		
Potential UCL to Use		Use 95% Student's-t UCL	6.808

Result or 1/2 DL (copper)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	34
Raw Statistics		Log-transformed Statistics	
Minimum	4.59	Minimum of Log Data	1.524
Maximum	200	Maximum of Log Data	5.298
Mean	18.7	Mean of log Data	2.553
Median	10.05	SD of log Data	0.689
SD	31.9		
Coefficient of Variation	1.705		
Skewness	5.536		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.347	Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	27.68	95% H-UCL	20.73
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.92
95% Adjusted-CLT UCL	32.69	97.5% Chebyshev (MVUE) UCL	28.71
95% Modified-t UCL	28.5	99% Chebyshev (MVUE) UCL	36.16
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.37	Data do not follow a Discernable Distribution (0.05)	
Theta Star	13.65		
nu star	98.64		
Approximate Chi Square Value (.05)	76.73	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	27.45
Adjusted Chi Square Value	75.85	95% Jackknife UCL	27.68
		95% Standard Bootstrap UCL	27.43
Anderson-Darling Test Statistic	2.951	95% Bootstrap-t UCL	50.7
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	60.07
Kolmogorov-Smirnov Test Statistic	0.204	95% Percentile Bootstrap UCL	28.98

Kolmogorov-Smirnov 5% Critical Value		0.15	95% BCA Bootstrap UCL		36.21
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		41.87
			97.5% Chebyshev(Mean, Sd) UCL		51.9
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		71.6
95% Approximate Gamma UCL		24.04			
95% Adjusted Gamma UCL		24.32			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		41.87
Result or 1/2 DL (cyclohexane)					
General Statistics					
Number of Valid Samples		19	Number of Unique Samples		19
Raw Statistics			Log-transformed Statistics		
Minimum		4.8100E-4	Minimum of Log Data		-7.64
Maximum		0.0255	Maximum of Log Data		-3.669
Mean		0.0056	Mean of log Data		-6.457
Median		6.3000E-4	SD of log Data		1.497
SD		0.0096			
Coefficient of Variation		1.696			
Skewness		1.55			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.553	Shapiro Wilk Test Statistic		0.705
Shapiro Wilk Critical Value		0.901	Shapiro Wilk Critical Value		0.901
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0094	95% H-UCL		0.016
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.012
95% Adjusted-CLT UCL		0.0101	97.5% Chebyshev (MVUE) UCL		0.0153
95% Modified-t UCL		0.0096	99% Chebyshev (MVUE) UCL		0.0218
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.452	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0125			
nu star		17.18			
Approximate Chi Square Value (.05)		8.804	Nonparametric Statistics		
Adjusted Level of Significance		0.0369	95% CLT UCL		0.0092
Adjusted Chi Square Value		8.282	95% Jackknife UCL		0.0094
			95% Standard Bootstrap UCL		0.0090
Anderson-Darling Test Statistic		3.232	95% Bootstrap-t UCL		0.0118
Anderson-Darling 5% Critical Value		0.804	95% Hall's Bootstrap UCL		0.0083
Kolmogorov-Smirnov Test Statistic		0.355	95% Percentile Bootstrap UCL		0.0094
Kolmogorov-Smirnov 5% Critical Value		0.21	95% BCA Bootstrap UCL		0.0105
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0153
			97.5% Chebyshev(Mean, Sd) UCL		0.0194
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0276
95% Approximate Gamma UCL		0.0111			

95% Adjusted Gamma UCL						0.0118									
Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL						0.0276			
Recommended UCL exceeds the maximum observation															
Result or 1/2 DL (dibenz(a,h)anthracene)															
General Statistics															
Number of Valid Samples				36		Number of Unique Samples				26					
Raw Statistics						Log-transformed Statistics									
				Minimum		0.0034						Minimum of Log Data		-5.674	
				Maximum		0.404						Maximum of Log Data		-0.906	
				Mean		0.0384						Mean of log Data		-4.616	
				Median		0.0054						SD of log Data		1.398	
				SD		0.0833									
				Coefficient of Variation		2.166									
				Skewness		3.088									
Relevant UCL Statistics															
Normal Distribution Test						Lognormal Distribution Test									
				Shapiro Wilk Test Statistic		0.49						Shapiro Wilk Test Statistic		0.646	
				Shapiro Wilk Critical Value		0.935						Shapiro Wilk Critical Value		0.935	
Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level									
Assuming Normal Distribution						Assuming Lognormal Distribution									
				95% Student's-t UCL		0.0619						95% H-UCL		0.052	
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL								0.0571	
				95% Adjusted-CLT UCL		0.0689						97.5% Chebyshev (MVUE) UCL		0.0709	
				95% Modified-t UCL		0.0631						99% Chebyshev (MVUE) UCL		0.0982	
Gamma Distribution Test						Data Distribution									
				k star (bias corrected)		0.451		Data do not follow a Discernable Distribution (0.05)							
				Theta Star		0.0852									
				nu star		32.49									
				Approximate Chi Square Value (.05)		20.46		Nonparametric Statistics							
				Adjusted Level of Significance		0.0428						95% CLT UCL		0.0613	
				Adjusted Chi Square Value		20.02						95% Jackknife UCL		0.0619	
												95% Standard Bootstrap UCL		0.0615	
				Anderson-Darling Test Statistic		7.096						95% Bootstrap-t UCL		0.0836	
				Anderson-Darling 5% Critical Value		0.819						95% Hall's Bootstrap UCL		0.0724	
				Kolmogorov-Smirnov Test Statistic		0.456						95% Percentile Bootstrap UCL		0.0633	
				Kolmogorov-Smirnov 5% Critical Value		0.156						95% BCA Bootstrap UCL		0.0733	
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL								0.0989	
						97.5% Chebyshev(Mean, Sd) UCL								0.125	
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL								0.177	
				95% Approximate Gamma UCL		0.0611									
				95% Adjusted Gamma UCL		0.0624									
Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL								0.177	

Result or 1/2 DL (dibenzofuran)			
General Statistics			
Number of Valid Samples	36	Number of Unique Samples	27
Raw Statistics		Log-transformed Statistics	
Minimum	0.0030	Minimum of Log Data	-5.799
Maximum	0.0862	Maximum of Log Data	-2.451
Mean	0.0099	Mean of log Data	-4.945
Median	0.0075	SD of log Data	0.667
SD	0.0145		
Coefficient of Variation	1.457		
Skewness	4.686		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.375	Shapiro Wilk Test Statistic	0.732
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.014	95% H-UCL	0.0112
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0135
95% Adjusted-CLT UCL	0.0159	97.5% Chebyshev (MVUE) UCL	0.0155
95% Modified-t UCL	0.0143	99% Chebyshev (MVUE) UCL	0.0194
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.523	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0065		
nu star	109.7		
Approximate Chi Square Value (.05)	86.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0139
Adjusted Chi Square Value	85.57	95% Jackknife UCL	0.014
		95% Standard Bootstrap UCL	0.0137
Anderson-Darling Test Statistic	5.17	95% Bootstrap-t UCL	0.0303
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	0.0344
Kolmogorov-Smirnov Test Statistic	0.389	95% Percentile Bootstrap UCL	0.0141
Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	0.0172
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0205
		97.5% Chebyshev(Mean, Sd) UCL	0.025
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.034
95% Approximate Gamma UCL	0.0126		
95% Adjusted Gamma UCL	0.0128		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0205

Result or 1/2 DL (diethyl phthalate)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	29

Raw Statistics				Log-transformed Statistics			
	Minimum	0.0037		Minimum of Log Data	-5.578		
	Maximum	0.0498		Maximum of Log Data	-3		
	Mean	0.0097		Mean of log Data	-4.752		
	Median	0.0092		SD of log Data	0.448		
	SD	0.0072					
	Coefficient of Variation	0.743					
	Skewness	5.035					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.413			Shapiro Wilk Test Statistic	0.712	
	Shapiro Wilk Critical Value	0.935			Shapiro Wilk Critical Value	0.935	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0118			95% H-UCL	0.011	
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL	0.0127	
	95% Adjusted-CLT UCL	0.0128			97.5% Chebyshev (MVUE) UCL	0.0141	
	95% Modified-t UCL	0.012			99% Chebyshev (MVUE) UCL	0.0168	
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	3.92		Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0024					
	nu star	282.3					
	Approximate Chi Square Value (.05)	244.3		Nonparametric Statistics			
	Adjusted Level of Significance	0.0428			95% CLT UCL	0.0117	
	Adjusted Chi Square Value	242.7			95% Jackknife UCL	0.0118	
					95% Standard Bootstrap UCL	0.0117	
	Anderson-Darling Test Statistic	4.813			95% Bootstrap-t UCL	0.0146	
	Anderson-Darling 5% Critical Value	0.752			95% Hall's Bootstrap UCL	0.0208	
	Kolmogorov-Smirnov Test Statistic	0.332			95% Percentile Bootstrap UCL	0.012	
	Kolmogorov-Smirnov 5% Critical Value	0.147			95% BCA Bootstrap UCL	0.0135	
Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL	0.015	
					97.5% Chebyshev(Mean, Sd) UCL	0.0173	
					99% Chebyshev(Mean, Sd) UCL	0.0218	
Assuming Gamma Distribution							
	95% Approximate Gamma UCL	0.0113					
	95% Adjusted Gamma UCL	0.0113					
Potential UCL to Use					Use 95% Student's-t UCL	0.0118	
					or 95% Modified-t UCL	0.012	
Result or 1/2 DL (di-n-butyl phthalate)							
General Statistics							
	Number of Valid Samples	36			Number of Unique Samples	31	
Raw Statistics				Log-transformed Statistics			
	Minimum	0.0039			Minimum of Log Data	-5.525	
	Maximum	0.0835			Maximum of Log Data	-2.483	

Mean	0.0155	Mean of log Data	-4.358
Median	0.0154	SD of log Data	0.624
SD	0.0128		
Coefficient of Variation	0.822		
Skewness	4.448		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.486	Shapiro Wilk Test Statistic	0.744
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0191	95% H-UCL	0.0192
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.023
95% Adjusted-CLT UCL	0.0207	97.5% Chebyshev (MVUE) UCL	0.0262
95% Modified-t UCL	0.0194	99% Chebyshev (MVUE) UCL	0.0326
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.534	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0061		
nu star	182.4		
Approximate Chi Square Value (.05)	152.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.019
Adjusted Chi Square Value	150.9	95% Jackknife UCL	0.0191
		95% Standard Bootstrap UCL	0.0189
Anderson-Darling Test Statistic	4.3	95% Bootstrap-t UCL	0.0225
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	0.035
Kolmogorov-Smirnov Test Statistic	0.308	95% Percentile Bootstrap UCL	0.0195
Kolmogorov-Smirnov 5% Critical Value	0.148	95% BCA Bootstrap UCL	0.0214
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0248
		97.5% Chebyshev(Mean, Sd) UCL	0.0288
		99% Chebyshev(Mean, Sd) UCL	0.0367
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0186		
95% Adjusted Gamma UCL	0.0188		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0248

Result or 1/2 DL (di-n-octyl phthalate)

General Statistics

Number of Valid Samples		36	Number of Unique Samples		30
Raw Statistics			Log-transformed Statistics		
Minimum	0.0041		Minimum of Log Data	-5.48	
Maximum	0.123		Maximum of Log Data	-2.096	
Mean	0.0115		Mean of log Data	-4.921	
Median	0.0047		SD of log Data	0.76	
SD	0.0205				
Coefficient of Variation	1.774				
Skewness	4.971				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.376	Shapiro Wilk Test Statistic	0.707
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0173	95% H-UCL	0.0128
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0155
95% Adjusted-CLT UCL	0.0202	97.5% Chebyshev (MVUE) UCL	0.018
95% Modified-t UCL	0.0178	99% Chebyshev (MVUE) UCL	0.023
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.146	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0101		
nu star	82.54		
Approximate Chi Square Value (.05)	62.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0171
Adjusted Chi Square Value	61.81	95% Jackknife UCL	0.0173
		95% Standard Bootstrap UCL	0.0172
Anderson-Darling Test Statistic	5.068	95% Bootstrap-t UCL	0.0314
Anderson-Darling 5% Critical Value	0.772	95% Hall's Bootstrap UCL	0.0385
Kolmogorov-Smirnov Test Statistic	0.33	95% Percentile Bootstrap UCL	0.0178
Kolmogorov-Smirnov 5% Critical Value	0.15	95% BCA Bootstrap UCL	0.0216
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0264
		97.5% Chebyshev(Mean, Sd) UCL	0.0328
		99% Chebyshev(Mean, Sd) UCL	0.0455
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0152		
95% Adjusted Gamma UCL	0.0154		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0264

Result or 1/2 DL (ethylbenzene)

General Statistics			
Number of Valid Samples	19	Number of Unique Samples	19
Raw Statistics		Log-transformed Statistics	
Minimum	8.7000E-5	Minimum of Log Data	-9.35
Maximum	0.0050	Maximum of Log Data	-5.294
Mean	0.0016	Mean of log Data	-7.578
Median	1.1400E-4	SD of log Data	1.78
SD	0.0019		
Coefficient of Variation	1.168		
Skewness	0.735		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.759	Shapiro Wilk Test Statistic	0.748
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0024		95% H-UCL		0.0128	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0065	
95% Adjusted-CLT UCL		0.0024		97.5% Chebyshev (MVUE) UCL		0.0085	
95% Modified-t UCL		0.0024		99% Chebyshev (MVUE) UCL		0.0123	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.484		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0034					
nu star		18.4					
Approximate Chi Square Value (.05)		9.677		Nonparametric Statistics			
Adjusted Level of Significance		0.0369		95% CLT UCL		0.0024	
Adjusted Chi Square Value		9.127		95% Jackknife UCL		0.0024	
				95% Standard Bootstrap UCL		0.0023	
Anderson-Darling Test Statistic		2.006		95% Bootstrap-t UCL		0.0025	
Anderson-Darling 5% Critical Value		0.8		95% Hall's Bootstrap UCL		0.0023	
Kolmogorov-Smirnov Test Statistic		0.336		95% Percentile Bootstrap UCL		0.0024	
Kolmogorov-Smirnov 5% Critical Value		0.209		95% BCA Bootstrap UCL		0.0024	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0036	
				97.5% Chebyshev(Mean, Sd) UCL		0.0044	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0061	
95% Approximate Gamma UCL		0.0031					
95% Adjusted Gamma UCL		0.0033					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.0061	
Recommended UCL exceeds the maximum observation							
Result or 1/2 DL (fluoranthene)							
General Statistics							
Number of Valid Samples		36		Number of Unique Samples		26	
Raw Statistics				Log-transformed Statistics			
Minimum		0.0033		Minimum of Log Data		-5.69	
Maximum		2.19		Maximum of Log Data		0.784	
Mean		0.146		Mean of log Data		-4.243	
Median		0.0063		SD of log Data		1.752	
SD		0.469					
Coefficient of Variation		3.217					
Skewness		3.949					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.339		Shapiro Wilk Test Statistic		0.697	
Shapiro Wilk Critical Value		0.935		Shapiro Wilk Critical Value		0.935	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.278		95% H-UCL		0.181	

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.164
95% Adjusted-CLT UCL	0.329	97.5% Chebyshev (MVUE) UCL		0.209
95% Modified-t UCL	0.286	99% Chebyshev (MVUE) UCL		0.296
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.292	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.499			
nu star	21			
Approximate Chi Square Value (.05)	11.59	Nonparametric Statistics		
Adjusted Level of Significance	0.0428	95% CLT UCL		0.274
Adjusted Chi Square Value	11.27	95% Jackknife UCL		0.278
		95% Standard Bootstrap UCL		0.271
Anderson-Darling Test Statistic	6.927	95% Bootstrap-t UCL		0.911
Anderson-Darling 5% Critical Value	0.858	95% Hall's Bootstrap UCL		0.856
Kolmogorov-Smirnov Test Statistic	0.416	95% Percentile Bootstrap UCL		0.281
Kolmogorov-Smirnov 5% Critical Value	0.159	95% BCA Bootstrap UCL		0.352
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.486
		97.5% Chebyshev(Mean, Sd) UCL		0.633
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.923
95% Approximate Gamma UCL	0.264			
95% Adjusted Gamma UCL	0.271			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.923

Result or 1/2 DL (fluorene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	25
Raw Statistics		Log-transformed Statistics	
Minimum	0.0034	Minimum of Log Data	-5.674
Maximum	0.141	Maximum of Log Data	-1.959
Mean	0.0112	Mean of log Data	-5.042
Median	0.0053	SD of log Data	0.774
SD	0.0235		
Coefficient of Variation	2.098		
Skewness	5.169		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.329	Shapiro Wilk Test Statistic	0.623
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0178	95% H-UCL	0.0115
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.014
95% Adjusted-CLT UCL	0.0212	97.5% Chebyshev (MVUE) UCL	0.0163
95% Modified-t UCL	0.0183	99% Chebyshev (MVUE) UCL	0.0208
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	0.978	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0114		
nu star	70.43		
Approximate Chi Square Value (.05)	52.11	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0176
Adjusted Chi Square Value	51.39	95% Jackknife UCL	0.0178
		95% Standard Bootstrap UCL	0.0176
Anderson-Darling Test Statistic	7.344	95% Bootstrap-t UCL	0.035
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	0.0372
Kolmogorov-Smirnov Test Statistic	0.454	95% Percentile Bootstrap UCL	0.0181
Kolmogorov-Smirnov 5% Critical Value	0.151	95% BCA Bootstrap UCL	0.0227
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0282
		97.5% Chebyshev(Mean, Sd) UCL	0.0356
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0501
95% Approximate Gamma UCL	0.0151		
95% Adjusted Gamma UCL	0.0153		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0282

Result or 1/2 DL (indeno(1,2,3-cd)pyrene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	28
Raw Statistics		Log-transformed Statistics	
Minimum	0.007	Minimum of Log Data	-4.962
Maximum	1.51	Maximum of Log Data	0.412
Mean	0.113	Mean of log Data	-3.647
Median	0.0092	SD of log Data	1.563
SD	0.279		
Coefficient of Variation	2.469		
Skewness	4.199		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.427	Shapiro Wilk Test Statistic	0.762
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.192	95% H-UCL	0.201
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.204
95% Adjusted-CLT UCL	0.225	97.5% Chebyshev (MVUE) UCL	0.257
95% Modified-t UCL	0.197	99% Chebyshev (MVUE) UCL	0.361
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.423	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.268		
nu star	30.45		
Approximate Chi Square Value (.05)	18.84	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.19

Adjusted Chi Square Value	18.43	95% Jackknife UCL	0.192
		95% Standard Bootstrap UCL	0.19
Anderson-Darling Test Statistic	4.43	95% Bootstrap-t UCL	0.396
Anderson-Darling 5% Critical Value	0.825	95% Hall's Bootstrap UCL	0.517
Kolmogorov-Smirnov Test Statistic	0.35	95% Percentile Bootstrap UCL	0.198
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	0.243
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.316
		97.5% Chebyshev(Mean, Sd) UCL	0.404
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.577
95% Approximate Gamma UCL	0.183		
95% Adjusted Gamma UCL	0.187		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.577

Result or 1/2 DL (iron)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	32
Raw Statistics		Log-transformed Statistics	
Minimum	7120	Minimum of Log Data	8.871
Maximum	102000	Maximum of Log Data	11.53
Mean	17531	Mean of log Data	9.638
Median	15350	SD of log Data	0.436
SD	15039		
Coefficient of Variation	0.858		
Skewness	5.318		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.41	Shapiro Wilk Test Statistic	0.824
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	21765	95% H-UCL	19358
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22337
95% Adjusted-CLT UCL	24027	97.5% Chebyshev (MVUE) UCL	24726
95% Modified-t UCL	22136	99% Chebyshev (MVUE) UCL	29419
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.588	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4885		
nu star	258.4		
Approximate Chi Square Value (.05)	222.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	21653
Adjusted Chi Square Value	220.6	95% Jackknife UCL	21765
		95% Standard Bootstrap UCL	21576
Anderson-Darling Test Statistic	2.629	95% Bootstrap-t UCL	29376
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	38680
Kolmogorov-Smirnov Test Statistic	0.213	95% Percentile Bootstrap UCL	22237

Kolmogorov-Smirnov 5% Critical Value		0.148	95% BCA Bootstrap UCL		24682
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		28456
			97.5% Chebyshev(Mean, Sd) UCL		33183
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		42470
95% Approximate Gamma UCL		20389			
95% Adjusted Gamma UCL		20529			
Potential UCL to Use			Use 95% Student's-t UCL		21765
			or 95% Modified-t UCL		22136
Result or 1/2 DL (lead)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		31
Raw Statistics			Log-transformed Statistics		
Minimum		5.88	Minimum of Log Data		1.772
Maximum		471	Maximum of Log Data		6.155
Mean		37.8	Mean of log Data		2.932
Median		15.2	SD of log Data		0.931
SD		80.99			
Coefficient of Variation		2.143			
Skewness		4.731			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.388	Shapiro Wilk Test Statistic		0.781
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		60.6	95% H-UCL		41.65
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		50.42
95% Adjusted-CLT UCL		71.37	97.5% Chebyshev (MVUE) UCL		59.92
95% Modified-t UCL		62.38	99% Chebyshev (MVUE) UCL		78.59
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.79	Data do not follow a Discernable Distribution (0.05)		
Theta Star		47.83			
nu star		56.89			
Approximate Chi Square Value (.05)		40.55	Nonparametric Statistics		
Adjusted Level of Significance		0.0428	95% CLT UCL		60
Adjusted Chi Square Value		39.93	95% Jackknife UCL		60.6
			95% Standard Bootstrap UCL		60.09
Anderson-Darling Test Statistic		5.207	95% Bootstrap-t UCL		105.3
Anderson-Darling 5% Critical Value		0.784	95% Hall's Bootstrap UCL		130.3
Kolmogorov-Smirnov Test Statistic		0.389	95% Percentile Bootstrap UCL		61.68
Kolmogorov-Smirnov 5% Critical Value		0.152	95% BCA Bootstrap UCL		78.41
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		96.63
			97.5% Chebyshev(Mean, Sd) UCL		122.1
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		172.1

95% Approximate Gamma UCL		53.02			
95% Adjusted Gamma UCL		53.86			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		96.63
Result or 1/2 DL (lithium)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		33
Raw Statistics			Log-transformed Statistics		
	Minimum	2.59		Minimum of Log Data	0.952
	Maximum	32.2		Maximum of Log Data	3.472
	Mean	18.84		Mean of log Data	2.869
	Median	18.55		SD of log Data	0.424
	SD	5.952			
	Coefficient of Variation	0.316			
	Skewness	0.0191			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.97		Shapiro Wilk Test Statistic	0.789
	Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	20.51		95% H-UCL	22.03
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	25.35
	95% Adjusted-CLT UCL	20.47		97.5% Chebyshev (MVUE) UCL	27.99
	95% Modified-t UCL	20.51		99% Chebyshev (MVUE) UCL	33.19
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	7.068	Data appear Normal at 5% Significance Level		
	Theta Star	2.665			
	nu star	508.9			
	Approximate Chi Square Value (.05)	457.6	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428		95% CLT UCL	20.47
	Adjusted Chi Square Value	455.4		95% Jackknife UCL	20.51
				95% Standard Bootstrap UCL	20.44
	Anderson-Darling Test Statistic	0.738		95% Bootstrap-t UCL	20.48
	Anderson-Darling 5% Critical Value	0.749		95% Hall's Bootstrap UCL	20.47
	Kolmogorov-Smirnov Test Statistic	0.121		95% Percentile Bootstrap UCL	20.44
	Kolmogorov-Smirnov 5% Critical Value	0.147		95% BCA Bootstrap UCL	20.45
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	23.16
				97.5% Chebyshev(Mean, Sd) UCL	25.03
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	28.71
	95% Approximate Gamma UCL	20.95			
	95% Adjusted Gamma UCL	21.05			
Potential UCL to Use			Use 95% Student's-t UCL		20.51

Result or 1/2 DL (m,p-xylene)

General Statistics

Number of Valid Samples	19	Number of Unique Samples	19
-------------------------	----	--------------------------	----

Raw Statistics

Log-transformed Statistics

Minimum	1.6050E-4	Minimum of Log Data	-8.737
Maximum	0.0091	Maximum of Log Data	-4.694
Mean	0.0020	Mean of log Data	-7.556
Median	2.0500E-4	SD of log Data	1.604
SD	0.0034		
Coefficient of Variation	1.668		
Skewness	1.515		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.573	Shapiro Wilk Test Statistic	0.676
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

Assuming Lognormal Distribution

95% Student's-t UCL	0.0034	95% H-UCL	0.0073
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0048
95% Adjusted-CLT UCL	0.0036	97.5% Chebyshev (MVUE) UCL	0.0062
95% Modified-t UCL	0.0035	99% Chebyshev (MVUE) UCL	0.0089

Gamma Distribution Test

Data Distribution

k star (bias corrected)	0.428	Data do not follow a Discernable Distribution (0.05)
Theta Star	0.0048	
nu star	16.25	

Approximate Chi Square Value (.05)

Nonparametric Statistics

Adjusted Level of Significance	0.0369	95% CLT UCL	0.0033
Adjusted Chi Square Value	7.642	95% Jackknife UCL	0.0034
		95% Standard Bootstrap UCL	0.0033
Anderson-Darling Test Statistic	3.262	95% Bootstrap-t UCL	0.0041
Anderson-Darling 5% Critical Value	0.81	95% Hall's Bootstrap UCL	0.0030
Kolmogorov-Smirnov Test Statistic	0.411	95% Percentile Bootstrap UCL	0.0034
Kolmogorov-Smirnov 5% Critical Value	0.211	95% BCA Bootstrap UCL	0.0036
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0055
		97.5% Chebyshev(Mean, Sd) UCL	0.0070
		99% Chebyshev(Mean, Sd) UCL	0.0099

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0041
95% Adjusted Gamma UCL	0.0044

Potential UCL to Use

Use 99% Chebyshev (Mean, Sd) UCL 0.0099

Recommended UCL exceeds the maximum observation

Result or 1/2 DL (manganese)

General Statistics

Number of Valid Samples		36	Number of Unique Samples		36
Raw Statistics			Log-transformed Statistics		
	Minimum	82.3		Minimum of Log Data	4.41
	Maximum	1210		Maximum of Log Data	7.098
	Mean	347		Mean of log Data	5.709
	Median	289.5		SD of log Data	0.542
	SD	204.1			
	Coefficient of Variation	0.588			
	Skewness	2.242			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.816		Shapiro Wilk Test Statistic	0.963
	Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	404.5		95% H-UCL	417.2
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	491.6
	95% Adjusted-CLT UCL	416.6		97.5% Chebyshev (MVUE) UCL	553.9
	95% Modified-t UCL	406.6		99% Chebyshev (MVUE) UCL	676.4
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	3.417	Data appear Gamma Distributed at 5% Significance Level		
	Theta Star	101.6			
	nu star	246			
	Approximate Chi Square Value (.05)	210.7	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428		95% CLT UCL	403
	Adjusted Chi Square Value	209.2		95% Jackknife UCL	404.5
				95% Standard Bootstrap UCL	401.3
	Anderson-Darling Test Statistic	0.549		95% Bootstrap-t UCL	424.9
	Anderson-Darling 5% Critical Value	0.753		95% Hall's Bootstrap UCL	467
	Kolmogorov-Smirnov Test Statistic	0.11		95% Percentile Bootstrap UCL	405.4
	Kolmogorov-Smirnov 5% Critical Value	0.148		95% BCA Bootstrap UCL	417.9
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	495.3
				97.5% Chebyshev(Mean, Sd) UCL	559.4
				99% Chebyshev(Mean, Sd) UCL	685.4
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	405.2			
	95% Adjusted Gamma UCL	408.1			
Potential UCL to Use				Use 95% Approximate Gamma UCL	405.2

Result or 1/2 DL (mercury)

General Statistics					
Number of Valid Samples		36	Number of Unique Samples		23
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0011		Minimum of Log Data	-6.768
	Maximum	0.064		Maximum of Log Data	-2.749

Mean	0.0094	Mean of log Data	-5.346
Median	0.0074	SD of log Data	1.23
SD	0.0124		
Coefficient of Variation	1.306		
Skewness	2.923		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.667	Shapiro Wilk Test Statistic	0.846
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.013	95% H-UCL	0.0177
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0205
95% Adjusted-CLT UCL	0.0139	97.5% Chebyshev (MVUE) UCL	0.0251
95% Modified-t UCL	0.0131	99% Chebyshev (MVUE) UCL	0.0342
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.803	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0118		
nu star	57.82		
Approximate Chi Square Value (.05)	41.34	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.0129
Adjusted Chi Square Value	40.7	95% Jackknife UCL	0.013
		95% Standard Bootstrap UCL	0.0128
Anderson-Darling Test Statistic	1.891	95% Bootstrap-t UCL	0.0153
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	0.0288
Kolmogorov-Smirnov Test Statistic	0.247	95% Percentile Bootstrap UCL	0.0132
Kolmogorov-Smirnov 5% Critical Value	0.152	95% BCA Bootstrap UCL	0.0141
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0185
		97.5% Chebyshev(Mean, Sd) UCL	0.0224
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.03
95% Approximate Gamma UCL	0.0133		
95% Adjusted Gamma UCL	0.0135		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.03

Result or 1/2 DL (methylcyclohexane)

General Statistics

Number of Valid Samples	19	Number of Unique Samples	19
Raw Statistics		Log-transformed Statistics	
Minimum	1.4950E-4	Minimum of Log Data	-8.808
Maximum	0.0085	Maximum of Log Data	-4.762
Mean	0.0024	Mean of log Data	-7.039
Median	0.0015	SD of log Data	1.607
SD	0.0030		
Coefficient of Variation	1.259		
Skewness	1.227		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0036	95% H-UCL	0.0125
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0081
95% Adjusted-CLT UCL	0.0038	97.5% Chebyshev (MVUE) UCL	0.0105
95% Modified-t UCL	0.0037	99% Chebyshev (MVUE) UCL	0.0151
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.541	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0045		
nu star	20.57		
Approximate Chi Square Value (.05)	11.27	Nonparametric Statistics	
Adjusted Level of Significance	0.0369	95% CLT UCL	0.0036
Adjusted Chi Square Value	10.67	95% Jackknife UCL	0.0036
		95% Standard Bootstrap UCL	0.0035
Anderson-Darling Test Statistic	1.396	95% Bootstrap-t UCL	0.0040
Anderson-Darling 5% Critical Value	0.793	95% Hall's Bootstrap UCL	0.0035
Kolmogorov-Smirnov Test Statistic	0.289	95% Percentile Bootstrap UCL	0.0037
Kolmogorov-Smirnov 5% Critical Value	0.208	95% BCA Bootstrap UCL	0.0039
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0055
		97.5% Chebyshev(Mean, Sd) UCL	0.0068
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0095
95% Approximate Gamma UCL	0.0044		
95% Adjusted Gamma UCL	0.0047		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0095
Recommended UCL exceeds the maximum observation			

Result or 1/2 DL (molybdenum)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	28
Raw Statistics		Log-transformed Statistics	
Minimum	0.037	Minimum of Log Data	-3.297
Maximum	10.7	Maximum of Log Data	2.37
Mean	0.586	Mean of log Data	-1.916
Median	0.115	SD of log Data	1.44
SD	1.788		
Coefficient of Variation	3.054		
Skewness	5.477		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.321	Shapiro Wilk Test Statistic	0.86

Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		1.089	95% H-UCL		0.851
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.917
95% Adjusted-CLT UCL		1.367	97.5% Chebyshev (MVUE) UCL		1.144
95% Modified-t UCL		1.135	99% Chebyshev (MVUE) UCL		1.589
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.445	Data do not follow a Discernable Distribution (0.05)		
Theta Star		1.316			
nu star		32.04			
Approximate Chi Square Value (.05)		20.1	Nonparametric Statistics		
Adjusted Level of Significance		0.0428	95% CLT UCL		1.076
Adjusted Chi Square Value		19.67	95% Jackknife UCL		1.089
			95% Standard Bootstrap UCL		1.077
Anderson-Darling Test Statistic		3.324	95% Bootstrap-t UCL		2.845
Anderson-Darling 5% Critical Value		0.82	95% Hall's Bootstrap UCL		2.784
Kolmogorov-Smirnov Test Statistic		0.217	95% Percentile Bootstrap UCL		1.164
Kolmogorov-Smirnov 5% Critical Value		0.156	95% BCA Bootstrap UCL		1.557
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.885
			97.5% Chebyshev(Mean, Sd) UCL		2.447
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		3.551
95% Approximate Gamma UCL		0.933			
95% Adjusted Gamma UCL		0.954			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		3.551

Result or 1/2 DL (naphthalene)

General Statistics					
Number of Valid Samples		19	Number of Unique Samples		19
Raw Statistics			Log-transformed Statistics		
Minimum		1.5800E-4	Minimum of Log Data		-8.753
Maximum		0.251	Maximum of Log Data		-1.382
Mean		0.0236	Mean of log Data		-6.08
Median		0.0018	SD of log Data		2.079
SD		0.0644			
Coefficient of Variation		2.734			
Skewness		3.147			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.407	Shapiro Wilk Test Statistic		0.901
Shapiro Wilk Critical Value		0.901	Shapiro Wilk Critical Value		0.901
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0492	95% H-UCL		0.173

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0529
95% Adjusted-CLT UCL	0.0593	97.5% Chebyshev (MVUE) UCL		0.0693
95% Modified-t UCL	0.051	99% Chebyshev (MVUE) UCL		0.102
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.285	Data appear Lognormal at 5% Significance Level		
Theta Star	0.0827			
nu star	10.82			
Approximate Chi Square Value (.05)	4.458	Nonparametric Statistics		
Adjusted Level of Significance	0.0369	95% CLT UCL		0.0479
Adjusted Chi Square Value	4.107	95% Jackknife UCL		0.0492
		95% Standard Bootstrap UCL		0.0476
Anderson-Darling Test Statistic	2.192	95% Bootstrap-t UCL		0.506
Anderson-Darling 5% Critical Value	0.844	95% Hall's Bootstrap UCL		0.25
Kolmogorov-Smirnov Test Statistic	0.332	95% Percentile Bootstrap UCL		0.05
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL		0.063
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.088
		97.5% Chebyshev(Mean, Sd) UCL		0.116
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.171
95% Approximate Gamma UCL	0.0571			
95% Adjusted Gamma UCL	0.062			
Potential UCL to Use		Use 99% Chebyshev (MVUE) UCL		0.102

Result or 1/2 DL (nickel)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	32
Raw Statistics		Log-transformed Statistics	
Minimum	9.74	Minimum of Log Data	2.276
Maximum	51.7	Maximum of Log Data	3.945
Mean	17.17	Mean of log Data	2.795
Median	16	SD of log Data	0.288
SD	6.788		
Coefficient of Variation	0.395		
Skewness	3.881		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.637	Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	19.08	95% H-UCL	18.61
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.67
95% Adjusted-CLT UCL	19.82	97.5% Chebyshev (MVUE) UCL	22.24
95% Modified-t UCL	19.21	99% Chebyshev (MVUE) UCL	25.32
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	9.72	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	1.767		
nu star	699.9		
Approximate Chi Square Value (.05)	639.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	19.03
Adjusted Chi Square Value	636.9	95% Jackknife UCL	19.08
		95% Standard Bootstrap UCL	18.99
Anderson-Darling Test Statistic	1.205	95% Bootstrap-t UCL	20.64
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	27.37
Kolmogorov-Smirnov Test Statistic	0.146	95% Percentile Bootstrap UCL	19.15
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL	19.93
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.1
		97.5% Chebyshev(Mean, Sd) UCL	24.24
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.43
95% Approximate Gamma UCL	18.79		
95% Adjusted Gamma UCL	18.87		
Potential UCL to Use		Use 95% Approximate Gamma UCL	18.79

Result or 1/2 DL (phenanthrene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	30
Raw Statistics		Log-transformed Statistics	
Minimum	0.0036	Minimum of Log Data	-5.614
Maximum	1.34	Maximum of Log Data	0.293
Mean	0.0998	Mean of log Data	-4.194
Median	0.007	SD of log Data	1.57
SD	0.299		
Coefficient of Variation	2.991		
Skewness	3.832		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.354	Shapiro Wilk Test Statistic	0.743
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.184	95% H-UCL	0.119
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.12
95% Adjusted-CLT UCL	0.216	97.5% Chebyshev (MVUE) UCL	0.151
95% Modified-t UCL	0.189	99% Chebyshev (MVUE) UCL	0.212
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.344	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.29		
nu star	24.76		
Approximate Chi Square Value (.05)	14.43	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.182

Adjusted Chi Square Value	14.07	95% Jackknife UCL	0.184
		95% Standard Bootstrap UCL	0.182
Anderson-Darling Test Statistic	6.276	95% Bootstrap-t UCL	0.515
Anderson-Darling 5% Critical Value	0.845	95% Hall's Bootstrap UCL	0.538
Kolmogorov-Smirnov Test Statistic	0.359	95% Percentile Bootstrap UCL	0.187
Kolmogorov-Smirnov 5% Critical Value	0.158	95% BCA Bootstrap UCL	0.218
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.317
		97.5% Chebyshev(Mean, Sd) UCL	0.411
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.595
95% Approximate Gamma UCL	0.171		
95% Adjusted Gamma UCL	0.176		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.595

Result or 1/2 DL (pyrene)

General Statistics			
Number of Valid Samples	36	Number of Unique Samples	28
Raw Statistics		Log-transformed Statistics	
Minimum	0.0044	Minimum of Log Data	-5.424
Maximum	1.97	Maximum of Log Data	0.678
Mean	0.143	Mean of log Data	-4.094
Median	0.0067	SD of log Data	1.701
SD	0.444		
Coefficient of Variation	3.103		
Skewness	3.879		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.344	Shapiro Wilk Test Statistic	0.703
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.268	95% H-UCL	0.184
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.172
95% Adjusted-CLT UCL	0.316	97.5% Chebyshev (MVUE) UCL	0.218
95% Modified-t UCL	0.276	99% Chebyshev (MVUE) UCL	0.309
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.31	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.461		
nu star	22.31		
Approximate Chi Square Value (.05)	12.57	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	0.265
Adjusted Chi Square Value	12.24	95% Jackknife UCL	0.268
		95% Standard Bootstrap UCL	0.261
Anderson-Darling Test Statistic	6.595	95% Bootstrap-t UCL	0.852
Anderson-Darling 5% Critical Value	0.853	95% Hall's Bootstrap UCL	0.824
Kolmogorov-Smirnov Test Statistic	0.37	95% Percentile Bootstrap UCL	0.268

Kolmogorov-Smirnov 5% Critical Value		0.159	95% BCA Bootstrap UCL		0.336
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.465
			97.5% Chebyshev(Mean, Sd) UCL		0.605
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.879
95% Approximate Gamma UCL		0.254			
95% Adjusted Gamma UCL		0.261			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.879
Result or 1/2 DL (silver)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		20
Raw Statistics			Log-transformed Statistics		
Minimum		0.0135	Minimum of Log Data		-4.305
Maximum		0.41	Maximum of Log Data		-0.892
Mean		0.0473	Mean of log Data		-3.473
Median		0.0298	SD of log Data		0.718
SD		0.0773			
Coefficient of Variation		1.632			
Skewness		4.047			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.382	Shapiro Wilk Test Statistic		0.695
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0691	95% H-UCL		0.0518
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0625
95% Adjusted-CLT UCL		0.0778	97.5% Chebyshev (MVUE) UCL		0.0723
95% Modified-t UCL		0.0705	99% Chebyshev (MVUE) UCL		0.0915
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		1.233	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0384			
nu star		88.81			
Approximate Chi Square Value (.05)		68.08	Nonparametric Statistics		
Adjusted Level of Significance		0.0428	95% CLT UCL		0.0685
Adjusted Chi Square Value		67.26	95% Jackknife UCL		0.0691
			95% Standard Bootstrap UCL		0.068
Anderson-Darling Test Statistic		6.224	95% Bootstrap-t UCL		0.157
Anderson-Darling 5% Critical Value		0.77	95% Hall's Bootstrap UCL		0.157
Kolmogorov-Smirnov Test Statistic		0.432	95% Percentile Bootstrap UCL		0.0709
Kolmogorov-Smirnov 5% Critical Value		0.15	95% BCA Bootstrap UCL		0.0811
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.103
			97.5% Chebyshev(Mean, Sd) UCL		0.128
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.175
95% Approximate Gamma UCL		0.0617			

95% Adjusted Gamma UCL		0.0625			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		0.103
Result or 1/2 DL (strontium)					
General Statistics					
Number of Valid Samples		36	Number of Unique Samples		35
Raw Statistics			Log-transformed Statistics		
	Minimum	22.1		Minimum of Log Data	3.096
	Maximum	96.2		Maximum of Log Data	4.566
	Mean	56.15		Mean of log Data	3.952
	Median	53		SD of log Data	0.412
	SD	20.95			
	Coefficient of Variation	0.373			
	Skewness	0.15			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.954		Shapiro Wilk Test Statistic	0.933
	Shapiro Wilk Critical Value	0.935		Shapiro Wilk Critical Value	0.935
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	62.05		95% H-UCL	64.44
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	73.96
	95% Adjusted-CLT UCL	61.98		97.5% Chebyshev (MVUE) UCL	81.51
	95% Modified-t UCL	62.06		99% Chebyshev (MVUE) UCL	96.36
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	6.163	Data appear Normal at 5% Significance Level		
	Theta Star	9.111			
	nu star	443.7			
	Approximate Chi Square Value (.05)	395.9	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428		95% CLT UCL	61.89
	Adjusted Chi Square Value	393.8		95% Jackknife UCL	62.05
				95% Standard Bootstrap UCL	61.71
	Anderson-Darling Test Statistic	0.492		95% Bootstrap-t UCL	62.12
	Anderson-Darling 5% Critical Value	0.749		95% Hall's Bootstrap UCL	62.04
	Kolmogorov-Smirnov Test Statistic	0.106		95% Percentile Bootstrap UCL	61.53
	Kolmogorov-Smirnov 5% Critical Value	0.147		95% BCA Bootstrap UCL	61.57
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	71.37
				97.5% Chebyshev(Mean, Sd) UCL	77.95
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	90.89
	95% Approximate Gamma UCL	62.93			
	95% Adjusted Gamma UCL	63.26			
Potential UCL to Use			Use 95% Student's-t UCL		62.05

Result or 1/2 DL (tetrachloroethene)			
General Statistics			
Number of Valid Samples	19	Number of Unique Samples	18
Raw Statistics		Log-transformed Statistics	
Minimum	7.7500E-5	Minimum of Log Data	-9.465
Maximum	0.223	Maximum of Log Data	-1.501
Mean	0.0127	Mean of log Data	-7.936
Median	1.0500E-4	SD of log Data	2.239
SD	0.0509		
Coefficient of Variation	4.004		
Skewness	4.351		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.264	Shapiro Wilk Test Statistic	0.689
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.033	95% H-UCL	0.0528
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0115
95% Adjusted-CLT UCL	0.0444	97.5% Chebyshev (MVUE) UCL	0.0151
95% Modified-t UCL	0.0349	99% Chebyshev (MVUE) UCL	0.0222
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.208	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0612		
nu star	7.9		
Approximate Chi Square Value (.05)	2.677	Nonparametric Statistics	
Adjusted Level of Significance	0.0369	95% CLT UCL	0.0319
Adjusted Chi Square Value	2.419	95% Jackknife UCL	0.033
		95% Standard Bootstrap UCL	0.0313
Anderson-Darling Test Statistic	3.918	95% Bootstrap-t UCL	0.477
Anderson-Darling 5% Critical Value	0.885	95% Hall's Bootstrap UCL	0.346
Kolmogorov-Smirnov Test Statistic	0.388	95% Percentile Bootstrap UCL	0.036
Kolmogorov-Smirnov 5% Critical Value	0.22	95% BCA Bootstrap UCL	0.0482
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0637
		97.5% Chebyshev(Mean, Sd) UCL	0.0857
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.129
95% Approximate Gamma UCL	0.0375		
95% Adjusted Gamma UCL	0.0416		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.129
Result or 1/2 DL (tin)			
General Statistics			
Number of Valid Samples	36	Number of Unique Samples	20

Raw Statistics			Log-transformed Statistics		
	Minimum	0.195	Minimum of Log Data	-1.635	
	Maximum	3.67	Maximum of Log Data	1.3	
	Mean	0.47	Mean of log Data	-1.072	
	Median	0.285	SD of log Data	0.642	
	SD	0.628			
	Coefficient of Variation	1.334			
	Skewness	4.232			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.431	Shapiro Wilk Test Statistic	0.665	
	Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.647	95% H-UCL	0.524	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.627	
	95% Adjusted-CLT UCL	0.721	97.5% Chebyshev (MVUE) UCL	0.718	
	95% Modified-t UCL	0.659	99% Chebyshev (MVUE) UCL	0.896	
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	1.594	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.295			
	nu star	114.8			
	Approximate Chi Square Value (.05)	91.06	Nonparametric Statistics		
	Adjusted Level of Significance	0.0428	95% CLT UCL	0.642	
	Adjusted Chi Square Value	90.1	95% Jackknife UCL	0.647	
			95% Standard Bootstrap UCL	0.636	
	Anderson-Darling Test Statistic	6.272	95% Bootstrap-t UCL	0.881	
	Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	1.225	
	Kolmogorov-Smirnov Test Statistic	0.431	95% Percentile Bootstrap UCL	0.664	
	Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	0.747	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.926	
			97.5% Chebyshev(Mean, Sd) UCL	1.124	
			99% Chebyshev(Mean, Sd) UCL	1.511	
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	0.593			
	95% Adjusted Gamma UCL	0.599			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL	0.926	

Result or 1/2 DL (titanium)

General Statistics					
	Number of Valid Samples	36	Number of Unique Samples	33	
Raw Statistics			Log-transformed Statistics		
	Minimum	3.41	Minimum of Log Data	1.227	
	Maximum	57	Maximum of Log Data	4.043	
	Mean	20.83	Mean of log Data	2.854	
	Median	17.95	SD of log Data	0.641	

SD	12.9		
Coefficient of Variation	0.619		
Skewness	1.414		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.864	Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.46	95% H-UCL	26.55
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.75
95% Adjusted-CLT UCL	24.9	97.5% Chebyshev (MVUE) UCL	36.33
95% Modified-t UCL	24.54	99% Chebyshev (MVUE) UCL	45.33
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.679	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.774		
nu star	192.9		
Approximate Chi Square Value (.05)	161.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0428	95% CLT UCL	24.36
Adjusted Chi Square Value	160.5	95% Jackknife UCL	24.46
		95% Standard Bootstrap UCL	24.39
Anderson-Darling Test Statistic	0.489	95% Bootstrap-t UCL	25.42
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	25.08
Kolmogorov-Smirnov Test Statistic	0.105	95% Percentile Bootstrap UCL	24.46
Kolmogorov-Smirnov 5% Critical Value	0.148	95% BCA Bootstrap UCL	24.77
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	30.19
		97.5% Chebyshev(Mean, Sd) UCL	34.25
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	42.21
95% Approximate Gamma UCL	24.83		
95% Adjusted Gamma UCL	25.03		
Potential UCL to Use		Use 95% Approximate Gamma UCL	24.83

Result or 1/2 DL (toluene)

General Statistics

Number of Valid Samples	19	Number of Unique Samples	19
Raw Statistics		Log-transformed Statistics	
Minimum	2.3900E-4	Minimum of Log Data	-8.339
Maximum	0.0127	Maximum of Log Data	-4.366
Mean	0.0046	Mean of log Data	-6.263
Median	0.0036	SD of log Data	1.613
SD	0.0047		
Coefficient of Variation	1.03		
Skewness	0.722		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.807		Shapiro Wilk Test Statistic		0.82	
Shapiro Wilk Critical Value		0.901		Shapiro Wilk Critical Value		0.901	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0065		95% H-UCL		0.0275	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0179	
95% Adjusted-CLT UCL		0.0066		97.5% Chebyshev (MVUE) UCL		0.023	
95% Modified-t UCL		0.0065		99% Chebyshev (MVUE) UCL		0.0331	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.608		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0076					
nu star		23.11					
Approximate Chi Square Value (.05)		13.18		Nonparametric Statistics			
Adjusted Level of Significance		0.0369		95% CLT UCL		0.0064	
Adjusted Chi Square Value		12.52		95% Jackknife UCL		0.0065	
				95% Standard Bootstrap UCL		0.0064	
Anderson-Darling Test Statistic		1.109		95% Bootstrap-t UCL		0.0069	
Anderson-Darling 5% Critical Value		0.785		95% Hall's Bootstrap UCL		0.0065	
Kolmogorov-Smirnov Test Statistic		0.238		95% Percentile Bootstrap UCL		0.0064	
Kolmogorov-Smirnov 5% Critical Value		0.207		95% BCA Bootstrap UCL		0.0065	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0094	
				97.5% Chebyshev(Mean, Sd) UCL		0.0115	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0156	
95% Approximate Gamma UCL		0.0081					
95% Adjusted Gamma UCL		0.0085					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.0156	
Recommended UCL exceeds the maximum observation							
Result or 1/2 DL (vanadium)							
General Statistics							
Number of Valid Samples		36		Number of Unique Samples		33	
Raw Statistics				Log-transformed Statistics			
Minimum		7.85		Minimum of Log Data		2.061	
Maximum		45.8		Maximum of Log Data		3.824	
Mean		20.54		Mean of log Data		2.936	
Median		19.55		SD of log Data		0.434	
SD		8.387					
Coefficient of Variation		0.408					
Skewness		0.649					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.958		Shapiro Wilk Test Statistic		0.96	
Shapiro Wilk Critical Value		0.935		Shapiro Wilk Critical Value		0.935	
Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level			

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		22.9		95% H-UCL		23.75	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		27.39	
95% Adjusted-CLT UCL		23		97.5% Chebyshev (MVUE) UCL		30.3	
95% Modified-t UCL		22.93		99% Chebyshev (MVUE) UCL		36.03	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		5.487		Data appear Normal at 5% Significance Level			
Theta Star		3.743					
nu star		395.1					
Approximate Chi Square Value (.05)		350		Nonparametric Statistics			
Adjusted Level of Significance		0.0428		95% CLT UCL		22.84	
Adjusted Chi Square Value		348.1		95% Jackknife UCL		22.9	
				95% Standard Bootstrap UCL		22.8	
Anderson-Darling Test Statistic		0.319		95% Bootstrap-t UCL		23.04	
Anderson-Darling 5% Critical Value		0.75		95% Hall's Bootstrap UCL		23.09	
Kolmogorov-Smirnov Test Statistic		0.0966		95% Percentile Bootstrap UCL		22.82	
Kolmogorov-Smirnov 5% Critical Value		0.147		95% BCA Bootstrap UCL		23.08	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		26.63	
				97.5% Chebyshev(Mean, Sd) UCL		29.27	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		34.45	
95% Approximate Gamma UCL		23.19					
95% Adjusted Gamma UCL		23.31					
Potential UCL to Use				Use 95% Student's-t UCL		22.9	

Result or 1/2 DL (xylene (total))

General Statistics					
Number of Valid Samples		19	Number of Unique Samples		19
Raw Statistics			Log-transformed Statistics		
Minimum	2.3100E-4	Minimum of Log Data	-8.373		
Maximum	1.76	Maximum of Log Data	0.565		
Mean	0.119	Mean of log Data	-5.435		
Median	0.0031	SD of log Data	2.87		
SD	0.4				
Coefficient of Variation	3.368				
Skewness	4.273				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.318	Shapiro Wilk Test Statistic	0.862		
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901		
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.278	95% H-UCL	14.31		
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.553	
95% Adjusted-CLT UCL	0.366	97.5% Chebyshev (MVUE) UCL	0.737		

95% Modified-t UCL		0.293	99% Chebyshev (MVUE) UCL		1.099
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.22	Data Follow Appr. Gamma Distribution at 5% Significance Level		
Theta Star		0.54			
nu star		8.358			
Approximate Chi Square Value (.05)		2.944	Nonparametric Statistics		
Adjusted Level of Significance		0.0369	95% CLT UCL		0.27
Adjusted Chi Square Value		2.67	95% Jackknife UCL		0.278
			95% Standard Bootstrap UCL		0.264
Anderson-Darling Test Statistic		1.648	95% Bootstrap-t UCL		1.513
Anderson-Darling 5% Critical Value		0.879	95% Hall's Bootstrap UCL		0.904
Kolmogorov-Smirnov Test Statistic		0.208	95% Percentile Bootstrap UCL		0.303
Kolmogorov-Smirnov 5% Critical Value		0.219	95% BCA Bootstrap UCL		0.401
Data follow Appr. Gamma Distribution at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.519
			97.5% Chebyshev(Mean, Sd) UCL		0.692
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1.032
95% Approximate Gamma UCL		0.337			
95% Adjusted Gamma UCL		0.372			
Potential UCL to Use			Use 95% Adjusted Gamma UCL		0.372

Result or 1/2 DL (zinc)

General Statistics					
Number of Valid Samples		36	Number of Unique Samples		36
Raw Statistics			Log-transformed Statistics		
Minimum		21.1	Minimum of Log Data		3.049
Maximum		5640	Maximum of Log Data		8.638
Mean		242.5	Mean of log Data		4.287
Median		49.05	SD of log Data		1.039
SD		929.4			
Coefficient of Variation		3.833			
Skewness		5.918			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.228	Shapiro Wilk Test Statistic		0.776
Shapiro Wilk Critical Value		0.935	Shapiro Wilk Critical Value		0.935
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		504.2	95% H-UCL		191.5
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		229.8
95% Adjusted-CLT UCL		660.5	97.5% Chebyshev (MVUE) UCL		276.5
95% Modified-t UCL		529.7	99% Chebyshev (MVUE) UCL		368.1
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.499	Data do not follow a Discernable Distribution (0.05)		
Theta Star		486.3			

nu star		35.9		
Approximate Chi Square Value (.05)		23.19	Nonparametric Statistics	
Adjusted Level of Significance		0.0428	95% CLT UCL	497.3
Adjusted Chi Square Value		22.72	95% Jackknife UCL	504.2
			95% Standard Bootstrap UCL	499.1
Anderson-Darling Test Statistic		6.288	95% Bootstrap-t UCL	2637
Anderson-Darling 5% Critical Value		0.81	95% Hall's Bootstrap UCL	1588
Kolmogorov-Smirnov Test Statistic		0.315	95% Percentile Bootstrap UCL	550.3
Kolmogorov-Smirnov 5% Critical Value		0.155	95% BCA Bootstrap UCL	832.6
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	917.7
			97.5% Chebyshev(Mean, Sd) UCL	1210
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	1784
95% Approximate Gamma UCL		375.4		
95% Adjusted Gamma UCL		383.1		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	1784

APPENDIX A-5

BACKGROUND SOIL

General UCL Statistics for Full Data Sets			
User Selected Options			
From File	J:\1352 - Gulfco R\riskleco\Tables for Revisited SLERA\background soil table.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
Result or 1/2 SDL (antimony)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics			
		Log-transformed Statistics	
Minimum	0.125	Minimum of Log Data	-2.079
Maximum	2.19	Maximum of Log Data	0.784
Mean	0.953	Mean of log Data	-0.711
Median	0.815	SD of log Data	1.345
SD	0.878		
Coefficient of Variation	0.921		
Skewness	0.157		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.775	Shapiro Wilk Test Statistic	0.726
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.462	95% H-UCL	6.827
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.117
95% Adjusted-CLT UCL	1.424	97.5% Chebyshev (MVUE) UCL	4.01
95% Modified-t UCL	1.464	99% Chebyshev (MVUE) UCL	5.765
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.685	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.39		
nu star	13.71		
Approximate Chi Square Value (.05)	6.373	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	1.41
Adjusted Chi Square Value	5.527	95% Jackknife UCL	1.462
		95% Standard Bootstrap UCL	1.381
Anderson-Darling Test Statistic	1.346	95% Bootstrap-t UCL	1.452
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	1.306
Kolmogorov-Smirnov Test Statistic	0.329	95% Percentile Bootstrap UCL	1.394
Kolmogorov-Smirnov 5% Critical Value	0.275	95% BCA Bootstrap UCL	1.416
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.163
		97.5% Chebyshev(Mean, Sd) UCL	2.687
		99% Chebyshev(Mean, Sd) UCL	3.715
Assuming Gamma Distribution			
95% Approximate Gamma UCL	2.05		
95% Adjusted Gamma UCL	2.364		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	3.715
Recommended UCL exceeds the maximum observation			
Result or 1/2 SDL (arsenic)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics			
		Log-transformed Statistics	
Minimum	0.24	Minimum of Log Data	-1.427
Maximum	5.9	Maximum of Log Data	1.775
Mean	3.438	Mean of log Data	0.985
Median	3.625	SD of log Data	0.947
SD	1.792		
Coefficient of Variation	0.521		
Skewness	-0.35		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Test Statistic	0.749
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.477	95% H-UCL	10.79
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.349
95% Adjusted-CLT UCL	4.303	97.5% Chebyshev (MVUE) UCL	11.68
95% Modified-t UCL	4.466	99% Chebyshev (MVUE) UCL	16.27
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.572	Data appear Normal at 5% Significance Level	
Theta Star	2.187		
nu star	31.44		

Approximate Chi Square Value (.05)	19.63	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	4.37
Adjusted Chi Square Value	18.03	95% Jackknife UCL	4.477
		95% Standard Bootstrap UCL	4.299
Anderson-Darling Test Statistic	0.699	95% Bootstrap-t UCL	4.371
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	4.292
Kolmogorov-Smirnov Test Statistic	0.293	95% Percentile Bootstrap UCL	4.299
Kolmogorov-Smirnov 5% Critical Value	0.27	95% BCA Bootstrap UCL	4.27
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.908
		97.5% Chebyshev(Mean, Sd) UCL	6.976
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.075
95% Approximate Gamma UCL	5.507		
95% Adjusted Gamma UCL	5.997		
Potential UCL to Use		Use 95% Student's-t UCL	4.477

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	150	Minimum of Log Data	5.011
Maximum	1130	Maximum of Log Data	7.03
Mean	333.1	Mean of log Data	5.617
Median	259	SD of log Data	0.571
SD	288.1		
Coefficient of Variation	0.865		
Skewness	2.844		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.59	Shapiro Wilk Test Statistic	0.83
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	500.1	95% H-UCL	504
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	573.9
95% Adjusted-CLT UCL	570.5	97.5% Chebyshev (MVUE) UCL	684.7
95% Modified-t UCL	513.7	99% Chebyshev (MVUE) UCL	902.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.005	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	166.1		
nu star	40.11		
Approximate Chi Square Value (.05)	26.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	482.9
Adjusted Chi Square Value	24.7	95% Jackknife UCL	500.1
		95% Standard Bootstrap UCL	476.3
Anderson-Darling Test Statistic	1.01	95% Bootstrap-t UCL	877.8
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	1100
Kolmogorov-Smirnov Test Statistic	0.268	95% Percentile Bootstrap UCL	505.4
Kolmogorov-Smirnov 5% Critical Value	0.269	95% BCA Bootstrap UCL	601.4
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	730.2
		97.5% Chebyshev(Mean, Sd) UCL	902
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1239
95% Approximate Gamma UCL	502.3		
95% Adjusted Gamma UCL	540.9		
Potential UCL to Use		Use 95% Approximate Gamma UCL	502.3

Result or 1/2 SDL (benzo(a)anthracene)

General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.00323	Minimum of Log Data	-5.735
Maximum	0.082	Maximum of Log Data	-2.501
Mean	0.0116	Mean of log Data	-5.267
Median	0.00381	SD of log Data	0.979
SD	0.0247		
Coefficient of Variation	2.125		
Skewness	3.16		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.383	Shapiro Wilk Test Statistic	0.478
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.026	95% H-UCL	0.0226

95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.0189
95% Adjusted-CLT UCL	0.0328 97.5% Chebyshev (MVUE) UCL	0.0236
95% Modified-t UCL	0.0273 99% Chebyshev (MVUE) UCL	0.033
Gamma Distribution Test	Data Distribution	
k star (bias corrected)	0.583 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.02	
nu star	11.66	
Approximate Chi Square Value (.05)	5.004 Nonparametric Statistics	
Adjusted Level of Significance	0.0267 95% CLT UCL	0.0245
Adjusted Chi Square Value	4.271 95% Jackknife UCL	0.026
	95% Standard Bootstrap UCL	0.0238
Anderson-Darling Test Statistic	2.903 95% Bootstrap-t UCL	0.543
Anderson-Darling 5% Critical Value	0.758 95% Hall's Bootstrap UCL	0.258
Kolmogorov-Smirnov Test Statistic	0.513 95% Percentile Bootstrap UCL	0.0272
Kolmogorov-Smirnov 5% Critical Value	0.276 95% BCA Bootstrap UCL	0.0351
Data not Gamma Distributed at 5% Significance Level	95% Chebyshev(Mean, Sd) UCL	0.0457
	97.5% Chebyshev(Mean, Sd) UCL	0.0605
Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL	0.0894
95% Approximate Gamma UCL	0.0271	
95% Adjusted Gamma UCL	0.0318	
Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	0.0457

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics		
Number of Valid Samples	10 Number of Unique Samples	7
Raw Statistics	Log-transformed Statistics	
Minimum	0.00434 Minimum of Log Data	-5.44
Maximum	0.076 Maximum of Log Data	-2.577
Mean	0.0122 Mean of log Data	-5.008
Median	0.005 SD of log Data	0.863
SD	0.0224	
Coefficient of Variation	1.833	
Skewness	3.157	
Relevant UCL Statistics	Lognormal Distribution Test	
Normal Distribution Test	0.391 Shapiro Wilk Test Statistic	0.495
Shapiro Wilk Test Statistic	0.842 Shapiro Wilk Critical Value	0.842
Shapiro Wilk Critical Value	Data not Lognormal at 5% Significance Level	
Data not Normal at 5% Significance Level		
Assuming Normal Distribution	Assuming Lognormal Distribution	
95% Student's-t UCL	0.0252 95% H-UCL	0.0219
95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.0207
95% Adjusted-CLT UCL	0.0314 97.5% Chebyshev (MVUE) UCL	0.0257
95% Modified-t UCL	0.0264 99% Chebyshev (MVUE) UCL	0.0354
Gamma Distribution Test	Data Distribution	
k star (bias corrected)	0.739 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0165	
nu star	14.78	
Approximate Chi Square Value (.05)	7.109 Nonparametric Statistics	
Adjusted Level of Significance	0.0267 95% CLT UCL	0.0239
Adjusted Chi Square Value	6.207 95% Jackknife UCL	0.0252
	95% Standard Bootstrap UCL	0.0233
Anderson-Darling Test Statistic	2.773 95% Bootstrap-t UCL	0.307
Anderson-Darling 5% Critical Value	0.75 95% Hall's Bootstrap UCL	0.171
Kolmogorov-Smirnov Test Statistic	0.505 95% Percentile Bootstrap UCL	0.0263
Kolmogorov-Smirnov 5% Critical Value	0.274 95% BCA Bootstrap UCL	0.0334
Data not Gamma Distributed at 5% Significance Level	95% Chebyshev(Mean, Sd) UCL	0.0431
	97.5% Chebyshev(Mean, Sd) UCL	0.0565
Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL	0.0828
95% Approximate Gamma UCL	0.0254	
95% Adjusted Gamma UCL	0.0291	
Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	0.0431

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics		
Number of Valid Samples	10 Number of Unique Samples	10
Raw Statistics	Log-transformed Statistics	
Minimum	0.00349 Minimum of Log Data	-5.658
Maximum	0.057 Maximum of Log Data	-2.865
Mean	0.00941 Mean of log Data	-5.234
Median	0.00411 SD of log Data	0.84
SD	0.0167	
Coefficient of Variation	1.777	
Skewness	3.157	

Relevant UCL Statistics		
Normal Distribution Test	Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.393 Shapiro Wilk Test Statistic	0.497
Shapiro Wilk Critical Value	0.842 Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution	Assuming Lognormal Distribution	
95% Student's-t UCL	0.0191 95% H-UCL	0.0166
95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.016
95% Adjusted-CLT UCL	0.0238 97.5% Chebyshev (MVUE) UCL	0.0198
95% Modified-t UCL	0.02 99% Chebyshev (MVUE) UCL	0.0272
Gamma Distribution Test	Data Distribution	
k star (bias corrected)	0.777 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0121	
nu star	15.53	
Approximate Chi Square Value (.05)	7.632 Nonparametric Statistics	
Adjusted Level of Significance	0.0267 95% CLT UCL	0.0181
Adjusted Chi Square Value	6.692 95% Jackknife UCL	0.0191
	95% Standard Bootstrap UCL	0.0179
Anderson-Darling Test Statistic	2.757 95% Bootstrap-t UCL	0.231
Anderson-Darling 5% Critical Value	0.748 95% Hall's Bootstrap UCL	0.116
Kolmogorov-Smirnov Test Statistic	0.496 95% Percentile Bootstrap UCL	0.02
Kolmogorov-Smirnov 5% Critical Value	0.274 95% BCA Bootstrap UCL	0.0252
Data not Gamma Distributed at 5% Significance Level	95% Chebyshev(Mean, Sd) UCL	0.0325
	97.5% Chebyshev(Mean, Sd) UCL	0.0424
Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL	0.062
95% Approximate Gamma UCL	0.0192	
95% Adjusted Gamma UCL	0.0218	
Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	0.0325
Result or 1/2 SDL (benzo(g,h,i)perylene)		
General Statistics		
Number of Valid Samples	10 Number of Unique Samples	9
Raw Statistics	Log-transformed Statistics	
Minimum	0.015 Minimum of Log Data	-4.2
Maximum	0.083 Maximum of Log Data	-2.489
Mean	0.0241 Mean of log Data	-3.896
Median	0.0173 SD of log Data	0.508
SD	0.0208	
Coefficient of Variation	0.866	
Skewness	3.104	
Relevant UCL Statistics		
Normal Distribution Test	Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.458 Shapiro Wilk Test Statistic	0.581
Shapiro Wilk Critical Value	0.842 Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution	Assuming Lognormal Distribution	
95% Student's-t UCL	0.0361 95% H-UCL	0.0337
95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.0391
95% Adjusted-CLT UCL	0.0418 97.5% Chebyshev (MVUE) UCL	0.0461
95% Modified-t UCL	0.0372 99% Chebyshev (MVUE) UCL	0.0599
Gamma Distribution Test	Data Distribution	
k star (bias corrected)	2.254 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0107	
nu star	45.09	
Approximate Chi Square Value (.05)	30.68 Nonparametric Statistics	
Adjusted Level of Significance	0.0267 95% CLT UCL	0.0349
Adjusted Chi Square Value	28.63 95% Jackknife UCL	0.0361
	95% Standard Bootstrap UCL	0.034
Anderson-Darling Test Statistic	2.124 95% Bootstrap-t UCL	0.111
Anderson-Darling 5% Critical Value	0.732 95% Hall's Bootstrap UCL	0.0864
Kolmogorov-Smirnov Test Statistic	0.417 95% Percentile Bootstrap UCL	0.0365
Kolmogorov-Smirnov 5% Critical Value	0.268 95% BCA Bootstrap UCL	0.038
Data not Gamma Distributed at 5% Significance Level	95% Chebyshev(Mean, Sd) UCL	0.0527
	97.5% Chebyshev(Mean, Sd) UCL	0.0652
Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL	0.0895
95% Approximate Gamma UCL	0.0353	
95% Adjusted Gamma UCL	0.0379	
Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	0.0527
Result or 1/2 SDL (benzo(k)fluoranthene)		
General Statistics		
Number of Valid Samples	10 Number of Unique Samples	7
Raw Statistics	Log-transformed Statistics	

Minimum	0.00493	Minimum of Log Data	-5.313
Maximum	0.106	Maximum of Log Data	-2.244
Mean	0.0158	Mean of log Data	-4.861
Median	0.00575	SD of log Data	0.927
SD	0.0317		
Coefficient of Variation	2		
Skewness	3.16		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.386	Shapiro Wilk Test Statistic	0.483
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0342	95% H-UCL	0.0296
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0263
95% Adjusted-CLT UCL	0.043	97.5% Chebyshev (MVUE) UCL	0.0328
95% Modified-t UCL	0.0359	99% Chebyshev (MVUE) UCL	0.0455
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.644	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0246		
nu star	12.88		
Approximate Chi Square Value (.05)	5.815	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0323
Adjusted Chi Square Value	5.014	95% Jackknife UCL	0.0342
		95% Standard Bootstrap UCL	0.0311
Anderson-Darling Test Statistic	2.864	95% Bootstrap-t UCL	0.608
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	0.269
Kolmogorov-Smirnov Test Statistic	0.505	95% Percentile Bootstrap UCL	0.0358
Kolmogorov-Smirnov 5% Critical Value	0.275	95% BCA Bootstrap UCL	0.046
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0595
		97.5% Chebyshev(Mean, Sd) UCL	0.0784
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.116
95% Approximate Gamma UCL	0.0351		
95% Adjusted Gamma UCL	0.0407		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0595
Result or 1/2 SDL (cadmium)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.0075	Minimum of Log Data	-4.893
Maximum	0.11	Maximum of Log Data	-2.207
Mean	0.0311	Mean of log Data	-4.091
Median	0.0095	SD of log Data	1.081
SD	0.0398		
Coefficient of Variation	1.283		
Skewness	1.571		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.641	Shapiro Wilk Test Statistic	0.713
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0541	95% H-UCL	0.0974
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.071
95% Adjusted-CLT UCL	0.0585	97.5% Chebyshev (MVUE) UCL	0.0898
95% Modified-t UCL	0.0552	99% Chebyshev (MVUE) UCL	0.127
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.725	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0428		
nu star	14.5		
Approximate Chi Square Value (.05)	6.912	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0518
Adjusted Chi Square Value	6.025	95% Jackknife UCL	0.0541
		95% Standard Bootstrap UCL	0.0507
Anderson-Darling Test Statistic	1.584	95% Bootstrap-t UCL	0.105
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.0699
Kolmogorov-Smirnov Test Statistic	0.411	95% Percentile Bootstrap UCL	0.0515
Kolmogorov-Smirnov 5% Critical Value	0.274	95% BCA Bootstrap UCL	0.0581
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.086
		97.5% Chebyshev(Mean, Sd) UCL	0.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.156
95% Approximate Gamma UCL	0.0651		
95% Adjusted Gamma UCL	0.0747		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.156

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (carbazole)

General Statistics		
Number of Valid Samples	10 Number of Unique Samples	9
Raw Statistics		
Minimum	0.00376	Log-transformed Statistics
Maximum	0.011	Minimum of Log Data
Mean	0.00512	Maximum of Log Data
Median	0.00443	Mean of log Data
SD	0.00214	SD of log Data
Coefficient of Variation	0.418	
Skewness	2.781	
Relevant UCL Statistics		
Normal Distribution Test		Lognormal Distribution Test
Shapiro Wilk Test Statistic	0.608	Shapiro Wilk Test Statistic
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level
Assuming Normal Distribution		
95% Student's-t UCL	0.00636	Assuming Lognormal Distribution
95% UCLs (Adjusted for Skewness)		95% H-UCL
95% Adjusted-CLT UCL	0.00687	95% Chebyshev (MVUE) UCL
95% Modified-t UCL	0.00646	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
Gamma Distribution Test		
k star (bias corrected)	6.758	Data Distribution
Theta Star	7.57E-04	Data do not follow a Discernable Distribution (0.05)
nu star	135.2	
Approximate Chi Square Value (.05)	109.3	Nonparametric Statistics
Adjusted Level of Significance	0.0267	95% CLT UCL
Adjusted Chi Square Value	105.3	95% Jackknife UCL
		95% Standard Bootstrap UCL
Anderson-Darling Test Statistic	1.249	95% Bootstrap-t UCL
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL
		97.5% Chebyshev(Mean, Sd) UCL
		99% Chebyshev(Mean, Sd) UCL
Assuming Gamma Distribution		
95% Approximate Gamma UCL	0.00633	
95% Adjusted Gamma UCL	0.00657	
Potential UCL to Use		
		Use 95% Student's-t UCL
		or 95% Modified-t UCL

Result or 1/2 SDL (chromium)

General Statistics		
Number of Valid Samples	10 Number of Unique Samples	9
Raw Statistics		
Minimum	10.7	Log-transformed Statistics
Maximum	20.1	Minimum of Log Data
Mean	15.2	Maximum of Log Data
Median	14.15	Mean of log Data
SD	3.02	SD of log Data
Coefficient of Variation	0.199	
Skewness	0.27	
Relevant UCL Statistics		
Normal Distribution Test		Lognormal Distribution Test
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level
Assuming Normal Distribution		
95% Student's-t UCL	16.95	Assuming Lognormal Distribution
95% UCLs (Adjusted for Skewness)		95% H-UCL
95% Adjusted-CLT UCL	16.86	95% Chebyshev (MVUE) UCL
95% Modified-t UCL	16.96	97.5% Chebyshev (MVUE) UCL
		99% Chebyshev (MVUE) UCL
Gamma Distribution Test		
k star (bias corrected)	19.81	Data Distribution
Theta Star	0.767	Data appear Normal at 5% Significance Level
nu star	396.2	
Approximate Chi Square Value (.05)	351.1	Nonparametric Statistics
Adjusted Level of Significance	0.0267	95% CLT UCL
Adjusted Chi Square Value	343.7	95% Jackknife UCL
		95% Standard Bootstrap UCL
Anderson-Darling Test Statistic	0.388	95% Bootstrap-t UCL

Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	16.75
Kolmogorov-Smirnov Test Statistic	0.205	95% Percentile Bootstrap UCL	16.71
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	16.74
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.36
		97.5% Chebyshev(Mean, Sd) UCL	21.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.7
95% Approximate Gamma UCL	17.15		
95% Adjusted Gamma UCL	17.52		

k star (bias corrected)	7.922	Data appear Normal at 5% Significance Level	
Theta Star	1.529		
nu star	158.4		
Approximate Chi Square Value (.05)	130.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	14.17
Adjusted Chi Square Value	125.9	95% Jackknife UCL	14.41
		95% Standard Bootstrap UCL	14.08
Anderson-Darling Test Statistic	0.317	95% Bootstrap-t UCL	15.03
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	14.63
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	14.04
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	14.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.57
		97.5% Chebyshev(Mean, Sd) UCL	19.93
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.56
95% Approximate Gamma UCL	14.73		
95% Adjusted Gamma UCL	15.25		
Potential UCL to Use		Use 95% Student's-t UCL	14.41
Result or 1/2 SDL (fluoranthene)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.00486	Minimum of Log Data	-5.328
Maximum	0.156	Maximum of Log Data	-1.858
Mean	0.0208	Mean of log Data	-4.834
Median	0.00575	SD of log Data	1.053
SD	0.0475		
Coefficient of Variation	2.286		
Skewness	3.161		
Relevant UCL Statistics		Lognormal Distribution Test	
Normal Distribution Test			
Shapiro Wilk Test Statistic	0.38	Shapiro Wilk Test Statistic	0.477
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0483	95% H-UCL	0.0428
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0324
95% Adjusted-CLT UCL	0.0615	97.5% Chebyshev (MVUE) UCL	0.0409
95% Modified-t UCL	0.0508	99% Chebyshev (MVUE) UCL	0.0575
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.513	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0405		
nu star	10.26		
Approximate Chi Square Value (.05)	4.106	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.0455
Adjusted Chi Square Value	3.456	95% Jackknife UCL	0.0483
		95% Standard Bootstrap UCL	0.0443
Anderson-Darling Test Statistic	2.929	95% Bootstrap-t UCL	1.171
Anderson-Darling 5% Critical Value	0.766	95% Hall's Bootstrap UCL	0.527
Kolmogorov-Smirnov Test Statistic	0.515	95% Percentile Bootstrap UCL	0.0508
Kolmogorov-Smirnov 5% Critical Value	0.278	95% BCA Bootstrap UCL	0.0659
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0863
		97.5% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.17
95% Approximate Gamma UCL	0.0519		
95% Adjusted Gamma UCL	0.0617		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.17
Recommended UCL exceeds the maximum observation			
Result or 1/2 SDL (Indeno(1,2,3-cd)pyrene)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.0125	Minimum of Log Data	-4.382
Maximum	0.417	Maximum of Log Data	-0.875
Mean	0.0551	Mean of log Data	-3.88
Median	0.0148	SD of log Data	1.063
SD	0.127		
Coefficient of Variation	2.308		
Skewness	3.161		
Relevant UCL Statistics		Lognormal Distribution Test	
Normal Distribution Test			
Shapiro Wilk Test Statistic	0.379	Shapiro Wilk Test Statistic	0.47
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level

Assuming Normal Distribution
 95% Student's-t UCL
 95% UCLs (Adjusted for Skewness)
 95% Adjusted-CLT UCL
 95% Modified-t UCL

Gamma Distribution Test
 k star (bias corrected)
 Theta Star
 nu star
 Approximate Chi Square Value (.05)
 Adjusted Level of Significance
 Adjusted Chi Square Value

Anderson-Darling Test Statistic
 Anderson-Darling 5% Critical Value
 Kolmogorov-Smirnov Test Statistic
 Kolmogorov-Smirnov 5% Critical Value
 Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
 95% Approximate Gamma UCL
 95% Adjusted Gamma UCL

Potential UCL to Use
 Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (lead)

General Statistics

Number of Valid Samples

Raw Statistics

Minimum
 Maximum
 Mean
 Median
 SD
 Coefficient of Variation
 Skewness

Relevant UCL Statistics

Normal Distribution Test
 Shapiro Wilk Test Statistic
 Shapiro Wilk Critical Value
 Data appear Normal at 5% Significance Level

Assuming Normal Distribution
 95% Student's-t UCL
 95% UCLs (Adjusted for Skewness)
 95% Adjusted-CLT UCL
 95% Modified-t UCL

Gamma Distribution Test
 k star (bias corrected)
 Theta Star
 nu star
 Approximate Chi Square Value (.05)
 Adjusted Level of Significance
 Adjusted Chi Square Value

Anderson-Darling Test Statistic
 Anderson-Darling 5% Critical Value
 Kolmogorov-Smirnov Test Statistic
 Kolmogorov-Smirnov 5% Critical Value
 Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
 95% Approximate Gamma UCL
 95% Adjusted Gamma UCL

Potential UCL to Use

Result or 1/2 SDL (lithium)

General Statistics

Number of Valid Samples

Raw Statistics

Minimum
 Maximum
 Mean

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution
 95% H-UCL
 95% Chebyshev (MVUE) UCL
 97.5% Chebyshev (MVUE) UCL
 99% Chebyshev (MVUE) UCL

Data Distribution
 Data do not follow a Discernable Distribution (0.05)

4 Nonparametric Statistics
 95% CLT UCL
 95% Jackknife UCL
 95% Standard Bootstrap UCL
 95% Bootstrap-t UCL
 95% Hall's Bootstrap UCL
 95% Percentile Bootstrap UCL
 95% BCA Bootstrap UCL
 95% Chebyshev(Mean, Sd) UCL
 97.5% Chebyshev(Mean, Sd) UCL
 99% Chebyshev(Mean, Sd) UCL

Use 99% Chebyshev (Mean, Sd) UCL

10 Number of Unique Samples

Log-transformed Statistics

11 Minimum of Log Data
 15.2 Maximum of Log Data
 13.43 Mean of log Data
 13.35 SD of log Data

Lognormal Distribution Test
 Shapiro Wilk Test Statistic
 Shapiro Wilk Critical Value
 Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution
 95% H-UCL
 95% Chebyshev (MVUE) UCL
 97.5% Chebyshev (MVUE) UCL
 99% Chebyshev (MVUE) UCL

Data Distribution
 Data appear Normal at 5% Significance Level

1063 Nonparametric Statistics
 95% CLT UCL
 95% Jackknife UCL
 95% Standard Bootstrap UCL
 95% Bootstrap-t UCL
 95% Hall's Bootstrap UCL
 95% Percentile Bootstrap UCL
 95% BCA Bootstrap UCL
 95% Chebyshev(Mean, Sd) UCL
 97.5% Chebyshev(Mean, Sd) UCL
 99% Chebyshev(Mean, Sd) UCL

14.41
 14.59

Use 95% Student's-t UCL

10 Number of Unique Samples

Log-transformed Statistics

14.4 Minimum of Log Data
 32.5 Maximum of Log Data
 21.14 Mean of log Data

0.114
 0.0853
 0.108
 0.152

0.121
 0.129
 0.119
 3.62
 1.642
 0.135
 0.175
 0.23
 0.306
 0.455

0.455

9

2.398
 2.721
 2.591
 0.118

0.909
 0.842

14.43
 15.62
 16.56
 18.42

14.23
 14.33
 14.18
 14.21
 14.11
 14.17
 14.15
 15.56
 16.49
 18.3

14.33

10

2.667
 3.481
 3.027

Median	19.9	SD of log Data	0.229
SD	5.168		
Coefficient of Variation	0.244		
Skewness	1.214		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.912	Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.13	95% H-UCL	24.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.82
95% Adjusted-CLT UCL	24.5	97.5% Chebyshev (MVUE) UCL	30.72
95% Modified-t UCL	24.24	99% Chebyshev (MVUE) UCL	36.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.43	Data appear Normal at 5% Significance Level	
Theta Star	1.465		
nu star	288.6		
Approximate Chi Square Value (.05)	250.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	23.83
Adjusted Chi Square Value	244.1	95% Jackknife UCL	24.13
		95% Standard Bootstrap UCL	23.71
Anderson-Darling Test Statistic	0.311	95% Bootstrap-t UCL	26.29
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	40.64
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	23.88
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	24.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.26
		97.5% Chebyshev(Mean, Sd) UCL	31.34
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	37.39
95% Approximate Gamma UCL	24.38		
95% Adjusted Gamma UCL	25		
Potential UCL to Use		Use 95% Student's-t UCL	24.13
Result or 1/2 SDL (manganese)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	284	Minimum of Log Data	5.649
Maximum	551	Maximum of Log Data	6.312
Mean	377.4	Mean of log Data	5.909
Median	333	SD of log Data	0.227
SD	93.76		
Coefficient of Variation	0.248		
Skewness	1.28		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.796	Shapiro Wilk Test Statistic	0.843
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	431.8	95% H-UCL	436.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	495.4
95% Adjusted-CLT UCL	439	97.5% Chebyshev (MVUE) UCL	546.6
95% Modified-t UCL	433.8	99% Chebyshev (MVUE) UCL	647.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.38	Data appear Lognormal at 5% Significance Level	
Theta Star	26.25		
nu star	287.6		
Approximate Chi Square Value (.05)	249.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	426.2
Adjusted Chi Square Value	243.1	95% Jackknife UCL	431.8
		95% Standard Bootstrap UCL	422.7
Anderson-Darling Test Statistic	0.85	95% Bootstrap-t UCL	494.2
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	681.2
Kolmogorov-Smirnov Test Statistic	0.284	95% Percentile Bootstrap UCL	425.6
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	436.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	506.6
		97.5% Chebyshev(Mean, Sd) UCL	562.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	672.4
95% Approximate Gamma UCL	435.3		
95% Adjusted Gamma UCL	446.4		
Potential UCL to Use		Use 95% Student's-t UCL	431.8
		or 95% Modified-t UCL	433.8
		or 95% H-UCL	436.5

Result or 1/2 SDL (mercury)

General Statistics		
Number of Valid Samples	10	Number of Unique Samples 8
Raw Statistics		
Log-transformed Statistics		
Minimum	0.015	Minimum of Log Data -4.2
Maximum	0.03	Maximum of Log Data -3.507
Mean	0.0213	Mean of log Data -3.871
Median	0.0195	SD of log Data 0.217
SD	0.00479	
Coefficient of Variation	0.225	
Skewness	0.734	
Relevant UCL Statistics		
Normal Distribution Test		
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk Test Statistic 0.937
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value 0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level
Assuming Normal Distribution		
Assuming Lognormal Distribution		
95% Student's-t UCL	0.0241	95% H-UCL 0.0245
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL 0.0277
95% Adjusted-CLT UCL	0.0242	97.5% Chebyshev (MVUE) UCL 0.0305
95% Modified-t UCL	0.0241	99% Chebyshev (MVUE) UCL 0.0359
Gamma Distribution Test		
Data Distribution		
k star (bias corrected)	16.3	Data appear Normal at 5% Significance Level
Theta Star	0.00131	
nu star	326.1	
Approximate Chi Square Value (.05)	285.2	Nonparametric Statistics
Adjusted Level of Significance	0.0267	95% CLT UCL 0.0238
Adjusted Chi Square Value	278.6	95% Jackknife UCL 0.0241
		95% Standard Bootstrap UCL 0.0236
Anderson-Darling Test Statistic	0.458	95% Bootstrap-t UCL 0.0246
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL 0.024
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL 0.0238
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL 0.0239
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 0.0279
		97.5% Chebyshev(Mean, Sd) UCL 0.0308
		99% Chebyshev(Mean, Sd) UCL 0.0364
Assuming Gamma Distribution		
95% Approximate Gamma UCL	0.0243	
95% Adjusted Gamma UCL	0.0249	
Potential UCL to Use		Use 95% Student's-t UCL 0.0241

Result or 1/2 SDL (molybdenum)

General Statistics		
Number of Valid Samples	10	Number of Unique Samples 10
Raw Statistics		
Log-transformed Statistics		
Minimum	0.42	Minimum of Log Data -0.868
Maximum	0.68	Maximum of Log Data -0.386
Mean	0.522	Mean of log Data -0.659
Median	0.505	SD of log Data 0.137
SD	0.0739	
Coefficient of Variation	0.142	
Skewness	0.94	
Relevant UCL Statistics		
Normal Distribution Test		
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Test Statistic 0.974
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value 0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level
Assuming Normal Distribution		
Assuming Lognormal Distribution		
95% Student's-t UCL	0.565	95% H-UCL 0.568
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL 0.621
95% Adjusted-CLT UCL	0.568	97.5% Chebyshev (MVUE) UCL 0.663
95% Modified-t UCL	0.566	99% Chebyshev (MVUE) UCL 0.747
Gamma Distribution Test		
Data Distribution		
k star (bias corrected)	40.85	Data appear Normal at 5% Significance Level
Theta Star	0.0128	
nu star	817	
Approximate Chi Square Value (.05)	751.7	Nonparametric Statistics
Adjusted Level of Significance	0.0267	95% CLT UCL 0.56
Adjusted Chi Square Value	740.8	95% Jackknife UCL 0.565
		95% Standard Bootstrap UCL 0.56
Anderson-Darling Test Statistic	0.217	95% Bootstrap-t UCL 0.579
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL 0.59
Kolmogorov-Smirnov Test Statistic	0.153	95% Percentile Bootstrap UCL 0.558
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL 0.561

Data appear Gamma Distributed at 5% Significance Level	95% Chebyshev(Mean, Sd) UCL	0.624
	97.5% Chebyshev(Mean, Sd) UCL	0.668
	99% Chebyshev(Mean, Sd) UCL	0.755
Assuming Gamma Distribution		
95% Approximate Gamma UCL	0.567	
95% Adjusted Gamma UCL	0.576	
Potential UCL to Use	Use 95% Student's-t UCL	0.565
Result or 1/2 SDL (phenanthrene)		
General Statistics		
Number of Valid Samples	10 Number of Unique Samples	10
Raw Statistics		
	Log-transformed Statistics	
Minimum	0.00286 Minimum of Log Data	-5.859
Maximum	0.137 Maximum of Log Data	-1.988
Mean	0.0167 Mean of log Data	-5.327
Median	0.00336 SD of log Data	1.179
SD	0.0423	
Coefficient of Variation	2.525	
Skewness	3.162	
Relevant UCL Statistics		
Normal Distribution Test	Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.375 Shapiro Wilk Test Statistic	0.459
Shapiro Wilk Critical Value	0.842 Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		
95% Student's-t UCL	0.0412 95% H-UCL	0.0383
95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.0239
95% Adjusted-CLT UCL	0.053 97.5% Chebyshev (MVUE) UCL	0.0304
95% Modified-t UCL	0.0435 99% Chebyshev (MVUE) UCL	0.0432
Gamma Distribution Test		
k star (bias corrected)	0.425 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0394	
nu star	8.497	
Approximate Chi Square Value (.05)	3.026 Nonparametric Statistics	
Adjusted Level of Significance	0.0267 95% CLT UCL	0.0387
Adjusted Chi Square Value	2.487 95% Jackknife UCL	0.0412
		0.0378
Anderson-Darling Test Statistic	3.041 95% Standard Bootstrap UCL	
Anderson-Darling 5% Critical Value	0.776 95% Bootstrap-t UCL	1.724
Kolmogorov-Smirnov Test Statistic	0.53 95% Hall's Bootstrap UCL	0.748
Kolmogorov-Smirnov 5% Critical Value	0.281 95% Percentile Bootstrap UCL	0.0434
Data not Gamma Distributed at 5% Significance Level	0.281 95% BCA Bootstrap UCL	0.0568
	95% Chebyshev(Mean, Sd) UCL	0.075
	97.5% Chebyshev(Mean, Sd) UCL	0.1
	99% Chebyshev(Mean, Sd) UCL	0.15
Assuming Gamma Distribution		
95% Approximate Gamma UCL	0.047	
95% Adjusted Gamma UCL	0.0572	
Potential UCL to Use	Use 99% Chebyshev (Mean, Sd) UCL	0.15
Recommended UCL exceeds the maximum observation		

Result or 1/2 SDL (pyrene)

General Statistics		
Number of Valid Samples	10 Number of Unique Samples	7
Raw Statistics		
	Log-transformed Statistics	
Minimum	0.0085 Minimum of Log Data	-4.768
Maximum	0.127 Maximum of Log Data	-2.064
Mean	0.0218 Mean of log Data	-4.347
Median	0.01 SD of log Data	0.811
SD	0.037	
Coefficient of Variation	1.696	
Skewness	3.156	
Relevant UCL Statistics		
Normal Distribution Test	Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.396 Shapiro Wilk Test Statistic	0.501
Shapiro Wilk Critical Value	0.842 Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		
95% Student's-t UCL	0.0432 95% H-UCL	0.0376
95% UCLs (Adjusted for Skewness)	95% Chebyshev (MVUE) UCL	0.0373
95% Adjusted-CLT UCL	0.0535 97.5% Chebyshev (MVUE) UCL	0.046
95% Modified-t UCL	0.0452 99% Chebyshev (MVUE) UCL	0.063
Gamma Distribution Test		
k star (bias corrected)	0.834 Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0262	

nu star	16.67		
Approximate Chi Square Value (.05)	8.437	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.041
Adjusted Chi Square Value	7.441	95% Jackknife UCL	0.0432
		95% Standard Bootstrap UCL	0.0404
Anderson-Darling Test Statistic	2.722	95% Bootstrap-t UCL	0.464
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	0.239
Kolmogorov-Smirnov Test Statistic	0.493	95% Percentile Bootstrap UCL	0.0452
Kolmogorov-Smirnov 5% Critical Value	0.273	95% BCA Bootstrap UCL	0.0564
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0728
		97.5% Chebyshev(Mean, Sd) UCL	0.0948
		99% Chebyshev(Mean, Sd) UCL	0.138
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0431		
95% Adjusted Gamma UCL	0.0488		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0728
Result or 1/2 SDL (zinc)			
General Statistics			
Number of Valid Samples	10	Number of Unique Samples	10
Raw Statistics		Log-transformed Statistics	
Minimum	36.6	Minimum of Log Data	3.6
Maximum	969	Maximum of Log Data	6.876
Mean	247	Mean of log Data	4.667
Median	75.5	SD of log Data	1.272
SD	364.6		
Coefficient of Variation	1.476		
Skewness	1.694		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.62	Shapiro Wilk Test Statistic	0.795
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	458.3	95% H-UCL	1141
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	602.7
95% Adjusted-CLT UCL	502.6	97.5% Chebyshev (MVUE) UCL	772.1
95% Modified-t UCL	468.6	99% Chebyshev (MVUE) UCL	1105
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.567	Data do not follow a Discernable Distribution (0.05)	
Theta Star	435.3		
nu star	11.35		
Approximate Chi Square Value (.05)	4.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	436.6
Adjusted Chi Square Value	4.085	95% Jackknife UCL	458.3
		95% Standard Bootstrap UCL	426.1
Anderson-Darling Test Statistic	1.247	95% Bootstrap-t UCL	1346
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	1691
Kolmogorov-Smirnov Test Statistic	0.346	95% Percentile Bootstrap UCL	430.3
Kolmogorov-Smirnov 5% Critical Value	0.277	95% BCA Bootstrap UCL	496.4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	749.5
		97.5% Chebyshev(Mean, Sd) UCL	967
		99% Chebyshev(Mean, Sd) UCL	1394
Assuming Gamma Distribution			
95% Approximate Gamma UCL	583.8		
95% Adjusted Gamma UCL	685.9		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1394
Recommended UCL exceeds the maximum observation			

APPENDIX A-6

INTRACOASTAL WATERWAY SEDIMENT

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL			0.0011
Result or 1/2 SDL (1,2diphenylhydrazine/azobenzen)						
General Statistics						
Number of Valid Samples		16	Number of Unique Samples		13	
Raw Statistics			Log-transformed Statistics			
	Minimum	0.0050		Minimum of Log Data	-5.288	
	Maximum	0.0317		Maximum of Log Data	-3.451	
	Mean	0.0073		Mean of log Data	-5.056	
	Median	0.0054		SD of log Data	0.447	
	SD	0.0065				
	Coefficient of Variation	0.883				
	Skewness	3.903				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.369		Shapiro Wilk Test Statistic	0.515	
	Shapiro Wilk Critical Value	0.887		Shapiro Wilk Critical Value	0.887	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0103		95% H-UCL	0.0088	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0105	
	95% Adjusted-CLT UCL	0.0118		97.5% Chebyshev (MVUE) UCL	0.012	
	95% Modified-t UCL	0.0105		99% Chebyshev (MVUE) UCL	0.015	
Gamma Distribution Test			Data Distribution			
	k star (bias corrected)	2.896	Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0025				
	nu star	92.68				
	Approximate Chi Square Value (.05)	71.48	Nonparametric Statistics			
	Adjusted Level of Significance	0.0335		95% CLT UCL	0.0101	
	Adjusted Chi Square Value	69.36		95% Jackknife UCL	0.0103	
				95% Standard Bootstrap UCL	0.0099	
	Anderson-Darling Test Statistic	3.453		95% Bootstrap-t UCL	0.0268	
	Anderson-Darling 5% Critical Value	0.743		95% Hall's Bootstrap UCL	0.0205	
	Kolmogorov-Smirnov Test Statistic	0.376		95% Percentile Bootstrap UCL	0.0106	
	Kolmogorov-Smirnov 5% Critical Value	0.216		95% BCA Bootstrap UCL	0.0124	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0145	
				97.5% Chebyshev(Mean, Sd) UCL	0.0176	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.0236	
	95% Approximate Gamma UCL	0.0095				
	95% Adjusted Gamma UCL	0.0098				
Potential UCL to Use			Use 95% Student's-t UCL		0.0103	
			or 95% Modified-t UCL		0.0105	
Result or 1/2 SDL (2-methylnaphthalene)						

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0066	Minimum of Log Data	-5.021
Maximum	0.0188	Maximum of Log Data	-3.974
Mean	0.0083	Mean of log Data	-4.828
Median	0.0073	SD of log Data	0.261
SD	0.0029		
Coefficient of Variation	0.357		
Skewness	3.264		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.566	Shapiro Wilk Test Statistic	0.699
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0096	95% H-UCL	0.0093
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0106
95% Adjusted-CLT UCL	0.0102	97.5% Chebyshev (MVUE) UCL	0.0117
95% Modified-t UCL	0.0097	99% Chebyshev (MVUE) UCL	0.0137
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	10.55	Data do not follow a Discernable Distribution (0.05)	
Theta Star	7.8871E-4		
nu star	337.5		
Approximate Chi Square Value (.05)	295.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0095
Adjusted Chi Square Value	291.5	95% Jackknife UCL	0.0096
		95% Standard Bootstrap UCL	0.0094
Anderson-Darling Test Statistic	1.783	95% Bootstrap-t UCL	0.0116
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	0.0139
Kolmogorov-Smirnov Test Statistic	0.24	95% Percentile Bootstrap UCL	0.0096
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0104
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0116
		97.5% Chebyshev(Mean, Sd) UCL	0.013
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0157
95% Approximate Gamma UCL	0.0094		
95% Adjusted Gamma UCL	0.0096		
Potential UCL to Use		Use 95% Student's-t UCL	0.0096
		or 95% Modified-t UCL	0.0097

Result or 1/2 SDL (3,3'-dichlorobenzidine)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0293		Minimum of Log Data	-3.53
	Maximum	0.151		Maximum of Log Data	-1.89
	Mean	0.0408		Mean of log Data	-3.312
	Median	0.0316		SD of log Data	0.4
	SD	0.0297			
	Coefficient of Variation	0.729			
	Skewness	3.845			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.396		Shapiro Wilk Test Statistic	0.541
	Shapiro Wilk Critical Value	0.887		Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0538		95% H-UCL	0.0483
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0568
	95% Adjusted-CLT UCL	0.0607		97.5% Chebyshev (MVUE) UCL	0.0643
	95% Modified-t UCL	0.055		99% Chebyshev (MVUE) UCL	0.0792
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	3.785	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.0108			
	nu star	121.1			
	Approximate Chi Square Value (.05)	96.71	Nonparametric Statistics		
	Adjusted Level of Significance	0.0335		95% CLT UCL	0.053
	Adjusted Chi Square Value	94.23		95% Jackknife UCL	0.0538
				95% Standard Bootstrap UCL	0.0527
	Anderson-Darling Test Statistic	3.16		95% Bootstrap-t UCL	0.108
	Anderson-Darling 5% Critical Value	0.742		95% Hall's Bootstrap UCL	0.0974
	Kolmogorov-Smirnov Test Statistic	0.345		95% Percentile Bootstrap UCL	0.0553
	Kolmogorov-Smirnov 5% Critical Value	0.216		95% BCA Bootstrap UCL	0.0628
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0732
				97.5% Chebyshev(Mean, Sd) UCL	0.0872
				99% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	0.0511			
	95% Adjusted Gamma UCL	0.0524			
Potential UCL to Use				Use 95% Student's-t UCL	0.0538
				or 95% Modified-t UCL	0.055

Result or 1/2 SDL (4,4'-ddt)

General Statistics					
	Number of Valid Samples	17		Number of Unique Samples	15
Raw Statistics			Log-transformed Statistics		
	Minimum	8.8500E-5		Minimum of Log Data	-9.333
	Maximum	0.0033		Maximum of Log Data	-5.708
	Mean	4.1103E-4		Mean of log Data	-8.608

Median	1.0250E-4	SD of log Data	1.086
SD	7.9620E-4		
Coefficient of Variation	1.937		
Skewness	3.45		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.467	Shapiro Wilk Test Statistic	0.714
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.4817E-4	95% H-UCL	7.0721E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.1445E-4
95% Adjusted-CLT UCL	9.0131E-4	97.5% Chebyshev (MVUE) UCL	8.8812E-4
95% Modified-t UCL	7.7510E-4	99% Chebyshev (MVUE) UCL	0.0012
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.648	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6.3401E-4		
nu star	22.04		
Approximate Chi Square Value (.05)	12.37	Nonparametric Statistics	
Adjusted Level of Significance	0.0346	95% CLT UCL	7.2866E-4
Adjusted Chi Square Value	11.61	95% Jackknife UCL	7.4817E-4
		95% Standard Bootstrap UCL	7.1836E-4
Anderson-Darling Test Statistic	2.621	95% Bootstrap-t UCL	0.0018
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	0.0018
Kolmogorov-Smirnov Test Statistic	0.375	95% Percentile Bootstrap UCL	7.5694E-4
Kolmogorov-Smirnov 5% Critical Value	0.217	95% BCA Bootstrap UCL	9.4576E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0012
		97.5% Chebyshev(Mean, Sd) UCL	0.0016
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0023
95% Approximate Gamma UCL	7.3242E-4		
95% Adjusted Gamma UCL	7.8005E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0023

Result or 1/2 SDL (4,6-dinitro-2-methylphenol)

General Statistics

Number of Valid Samples		16	Number of Unique Samples		15
Raw Statistics			Log-transformed Statistics		
Minimum	0.0123		Minimum of Log Data	-4.402	
Maximum	0.0627		Maximum of Log Data	-2.769	
Mean	0.017		Mean of log Data	-4.186	
Median	0.0132		SD of log Data	0.399	
SD	0.0123				
Coefficient of Variation	0.725				
Skewness	3.843				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk Test Statistic	0.542
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0224	95% H-UCL	0.0201
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0237
95% Adjusted-CLT UCL	0.0252	97.5% Chebyshev (MVUE) UCL	0.0268
95% Modified-t UCL	0.0229	99% Chebyshev (MVUE) UCL	0.033
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.812	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0044		
nu star	122		
Approximate Chi Square Value (.05)	97.49	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0221
Adjusted Chi Square Value	95	95% Jackknife UCL	0.0224
		95% Standard Bootstrap UCL	0.022
Anderson-Darling Test Statistic	3.154	95% Bootstrap-t UCL	0.0447
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	0.0405
Kolmogorov-Smirnov Test Statistic	0.344	95% Percentile Bootstrap UCL	0.023
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0304
		97.5% Chebyshev(Mean, Sd) UCL	0.0363
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0477
95% Approximate Gamma UCL	0.0213		
95% Adjusted Gamma UCL	0.0218		
Potential UCL to Use		Use 95% Student's-t UCL	0.0224
		or 95% Modified-t UCL	0.0229

Result or 1/2 SDL (acenaphthene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0061	Minimum of Log Data	-5.099
Maximum	0.0631	Maximum of Log Data	-2.763
Mean	0.0116	Mean of log Data	-4.757
Median	0.0067	SD of log Data	0.628
SD	0.0144		
Coefficient of Variation	1.248		
Skewness	3.498		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.423	Shapiro Wilk Test Statistic	0.58
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887

Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0179		95% H-UCL		0.0149	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			
95% Adjusted-CLT UCL		0.0208		97.5% Chebyshev (MVUE) UCL		0.0209	
95% Modified-t UCL		0.0184		99% Chebyshev (MVUE) UCL		0.0272	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.535		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0075					
nu star		49.11					
Approximate Chi Square Value (.05)		34.02		Nonparametric Statistics			
Adjusted Level of Significance		0.0335		95% CLT UCL		0.0175	
Adjusted Chi Square Value		32.6		95% Jackknife UCL		0.0179	
				95% Standard Bootstrap UCL		0.0174	
Anderson-Darling Test Statistic		3.332		95% Bootstrap-t UCL		0.0819	
Anderson-Darling 5% Critical Value		0.752		95% Hall's Bootstrap UCL		0.0483	
Kolmogorov-Smirnov Test Statistic		0.415		95% Percentile Bootstrap UCL		0.0177	
Kolmogorov-Smirnov 5% Critical Value		0.218		95% BCA Bootstrap UCL		0.0211	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.0273	
				97.5% Chebyshev(Mean, Sd) UCL		0.034	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0474	
95% Approximate Gamma UCL		0.0167					
95% Adjusted Gamma UCL		0.0174					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.0273	

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples		16	
Number of Unique Samples		16	
Raw Statistics		Log-transformed Statistics	
Minimum	3900	Minimum of Log Data	8.269
Maximum	12500	Maximum of Log Data	9.433
Mean	6854	Mean of log Data	8.781
Median	6345	SD of log Data	0.331
SD	2346		
Coefficient of Variation	0.342		
Skewness	0.876		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7882	95% H-UCL	8081
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9351

95% Adjusted-CLT UCL	7956	97.5% Chebyshev (MVUE) UCL	10434
95% Modified-t UCL	7904	99% Chebyshev (MVUE) UCL	12562
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.977	Data appear Normal at 5% Significance Level	
Theta Star	859.3		
nu star	255.3		
Approximate Chi Square Value (.05)	219.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	7819
Adjusted Chi Square Value	215.5	95% Jackknife UCL	7882
		95% Standard Bootstrap UCL	7774
Anderson-Darling Test Statistic	0.237	95% Bootstrap-t UCL	8066
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	8093
Kolmogorov-Smirnov Test Statistic	0.116	95% Percentile Bootstrap UCL	7798
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	7883
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9411
		97.5% Chebyshev(Mean, Sd) UCL	10517
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12689
95% Approximate Gamma UCL	7980		
95% Adjusted Gamma UCL	8120		
Potential UCL to Use		Use 95% Student's-t UCL	7882

Result or 1/2 SDL (anthracene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0067	Minimum of Log Data	-5.006
Maximum	0.0753	Maximum of Log Data	-2.586
Mean	0.0201	Mean of log Data	-4.283
Median	0.0089	SD of log Data	0.838
SD	0.0205		
Coefficient of Variation	1.017		
Skewness	1.776		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.711	Shapiro Wilk Test Statistic	0.805
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0291	95% H-UCL	0.0335
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0378
95% Adjusted-CLT UCL	0.0309	97.5% Chebyshev (MVUE) UCL	0.0459
95% Modified-t UCL	0.0294	99% Chebyshev (MVUE) UCL	0.0619
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.24	Data do not follow a Discernable Distribution (0.05)	

Theta Star	0.0162		
nu star	39.69		
Approximate Chi Square Value (.05)	26.26	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0285
Adjusted Chi Square Value	25.02	95% Jackknife UCL	0.0291
		95% Standard Bootstrap UCL	0.0283
Anderson-Darling Test Statistic	1.546	95% Bootstrap-t UCL	0.0368
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	0.0337
Kolmogorov-Smirnov Test Statistic	0.323	95% Percentile Bootstrap UCL	0.0289
Kolmogorov-Smirnov 5% Critical Value	0.219	95% BCA Bootstrap UCL	0.0317
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0424
		97.5% Chebyshev(Mean, Sd) UCL	0.052
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.071
95% Approximate Gamma UCL	0.0304		
95% Adjusted Gamma UCL	0.0319		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0424

Result or 1/2 SDL (antimony)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.74	Minimum of Log Data	-0.301
Maximum	8.14	Maximum of Log Data	2.097
Mean	2.245	Mean of log Data	0.629
Median	1.75	SD of log Data	0.57
SD	1.751		
Coefficient of Variation	0.78		
Skewness	2.813		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.675	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.012	95% H-UCL	3.02
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.591
95% Adjusted-CLT UCL	3.294	97.5% Chebyshev (MVUE) UCL	4.201
95% Modified-t UCL	3.064	99% Chebyshev (MVUE) UCL	5.399
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.429	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.924		
nu star	77.73		
Approximate Chi Square Value (.05)	58.42	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	2.965
Adjusted Chi Square Value	56.52	95% Jackknife UCL	3.012

[illegible]

General Statistics

Raw Statistics

Minimum	2.41	Minimum of Log Data	0.88
Maximum	7.62	Maximum of Log Data	2.031
Mean	4.026	Mean of log Data	1.341
Median	3.805	SD of log Data	0.327
SD	1.4		
of Variation	0.348		
Skewness	1.175		

Normal Distribution Test

Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887

Assuming Normal Distribution

95% Student's-t UCL	4.64	95% H-UCL	4.732
95% Chebyshev (MVUE) UCL	4.64	95% Chebyshev (MVUE) UCL	5.471
95% Adjusted-CLT UCL	4.712	97.5% Chebyshev (MVUE) UCL	6.099
95% Modified-t UCL	4.657	99% Chebyshev (MVUE) UCL	7.332

k star (bias corrected)	8.049
Theta Star	0.5
nu star	257.6

Approximate Chi Square Value (.05)	221.4
Adjusted Level of Significance	0.0335
Adjusted Chi Square Value	217.6

Adjusted Level of Significance	0.0335	95% CLT UCL	4.602
Adjusted Chi Square Value	217.6	95% Jackknife UCL	4.64
		95% Standard Bootstrap UCL	4.587
Anderson-Darling Test Statistic	0.318	95% Bootstrap-t UCL	4.811
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	4.939
Kolmogorov-Smirnov Test Statistic	0.15	95% Percentile Bootstrap UCL	4.618
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	4.696

Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		5.552
				97.5% Chebyshev(Mean, Sd) UCL		6.212
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		7.508
95% Approximate Gamma UCL		4.684				
95% Adjusted Gamma UCL		4.766				
Potential UCL to Use				Use 95% Student's-t UCL		4.64
Result or 1/2 SDL (atrazine (aatrex))						
General Statistics						
Number of Valid Samples		16	Number of Unique Samples		15	
Raw Statistics			Log-transformed Statistics			
Minimum		0.012	Minimum of Log Data		-4.423	
Maximum		0.0814	Maximum of Log Data		-2.508	
Mean		0.0179	Mean of log Data		-4.189	
Median		0.0129	SD of log Data		0.466	
SD		0.017				
Coefficient of Variation		0.951				
Skewness		3.921				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.359	Shapiro Wilk Test Statistic		0.502	
Shapiro Wilk Critical Value		0.887	Shapiro Wilk Critical Value		0.887	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		0.0254	95% H-UCL		0.0216	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0255	
95% Adjusted-CLT UCL		0.0294	97.5% Chebyshev (MVUE) UCL		0.0293	
95% Modified-t UCL		0.0261	99% Chebyshev (MVUE) UCL		0.0368	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		2.613	Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0068				
nu star		83.62				
Approximate Chi Square Value (.05)		63.55	Nonparametric Statistics			
Adjusted Level of Significance		0.0335	95% CLT UCL		0.0249	
Adjusted Chi Square Value		61.56	95% Jackknife UCL		0.0254	
			95% Standard Bootstrap UCL		0.0247	
Anderson-Darling Test Statistic		3.587	95% Bootstrap-t UCL		0.0697	
Anderson-Darling 5% Critical Value		0.744	95% Hall's Bootstrap UCL		0.0528	
Kolmogorov-Smirnov Test Statistic		0.387	95% Percentile Bootstrap UCL		0.0264	
Kolmogorov-Smirnov 5% Critical Value		0.217	95% BCA Bootstrap UCL		0.0308	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0365	
			97.5% Chebyshev(Mean, Sd) UCL		0.0445	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0603	
95% Approximate Gamma UCL		0.0236				
95% Adjusted Gamma UCL		0.0243				

Potential UCL to Use				Use 95% Student's-t UCL		0.0254
				or 95% Modified-t UCL		0.0261
Result or 1/2 SDL (barium)						
General Statistics						
Number of Valid Samples		16	Number of Unique Samples		14	
Raw Statistics			Log-transformed Statistics			
	Minimum	116		Minimum of Log Data	4.754	
	Maximum	377		Maximum of Log Data	5.932	
	Mean	215.3		Mean of log Data	5.339	
	Median	198		SD of log Data	0.263	
	SD	59.65				
	Coefficient of Variation	0.277				
	Skewness	1.296				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.887		Shapiro Wilk Test Statistic	0.939	
	Shapiro Wilk Critical Value	0.887		Shapiro Wilk Critical Value	0.887	
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
	95% Student's-t UCL	241.4		95% H-UCL	244.4	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	277.3	
	95% Adjusted-CLT UCL	244.9		97.5% Chebyshev (MVUE) UCL	304.2	
	95% Modified-t UCL	242.2		99% Chebyshev (MVUE) UCL	357.1	
Gamma Distribution Test			Data Distribution			
	k star (bias corrected)	12.47	Data appear Gamma Distributed at 5% Significance Level			
	Theta Star	17.27				
	nu star	398.9				
	Approximate Chi Square Value (.05)	353.6	Nonparametric Statistics			
	Adjusted Level of Significance	0.0335		95% CLT UCL	239.8	
	Adjusted Chi Square Value	348.8		95% Jackknife UCL	241.4	
				95% Standard Bootstrap UCL	239.4	
	Anderson-Darling Test Statistic	0.562		95% Bootstrap-t UCL	250.3	
	Anderson-Darling 5% Critical Value	0.738		95% Hall's Bootstrap UCL	261.9	
	Kolmogorov-Smirnov Test Statistic	0.17		95% Percentile Bootstrap UCL	240	
	Kolmogorov-Smirnov 5% Critical Value	0.215		95% BCA Bootstrap UCL	244.2	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	280.3	
				97.5% Chebyshev(Mean, Sd) UCL	308.4	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	363.6	
	95% Approximate Gamma UCL	242.8				
	95% Adjusted Gamma UCL	246.2				
Potential UCL to Use			Use 95% Approximate Gamma UCL			
			242.8			

Result or 1/2 SDL (benzo(a)anthracene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	14
-------------------------	----	--------------------------	----

Raw Statistics

Log-transformed Statistics

Minimum	0.0062	Minimum of Log Data	-5.075
Maximum	0.395	Maximum of Log Data	-0.929
Mean	0.0454	Mean of log Data	-4.365
Median	0.0069	SD of log Data	1.321
SD	0.103		
Coefficient of Variation	2.258		
Skewness	3.108		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.454	Shapiro Wilk Test Statistic	0.591
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

Assuming Lognormal Distribution

95% Student's-t UCL	0.0904	95% H-UCL	0.092
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0734
95% Adjusted-CLT UCL	0.109	97.5% Chebyshev (MVUE) UCL	0.0931
95% Modified-t UCL	0.0937	99% Chebyshev (MVUE) UCL	0.132

Gamma Distribution Test

Data Distribution

k star (bias corrected)	0.447	Data do not follow a Discernable Distribution (0.05)
Theta Star	0.102	
nu star	14.31	

Approximate Chi Square Value (.05)

Nonparametric Statistics

Adjusted Level of Significance	0.0335	95% CLT UCL	0.0876
Adjusted Chi Square Value	6.203	95% Jackknife UCL	0.0904
		95% Standard Bootstrap UCL	0.0863
Anderson-Darling Test Statistic	3.576	95% Bootstrap-t UCL	0.28
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	0.328
Kolmogorov-Smirnov Test Statistic	0.468	95% Percentile Bootstrap UCL	0.0904
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.118
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.157
		97.5% Chebyshev(Mean, Sd) UCL	0.206
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.301

95% Approximate Gamma UCL

0.0958

95% Adjusted Gamma UCL

0.105

Potential UCL to Use

Use 99% Chebyshev (Mean, Sd) UCL

0.301

Result or 1/2 SDL (benzo(a)pyrene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15
-------------------------	----	--------------------------	----

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0062		Minimum of Log Data	-5.083
	Maximum	0.445		Maximum of Log Data	-0.81
	Mean	0.0661		Mean of log Data	-3.88
	Median	0.0078		SD of log Data	1.521
	SD	0.115			
	Coefficient of Variation	1.737			
	Skewness	2.722			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.598		Shapiro Wilk Test Statistic	0.764
	Shapiro Wilk Critical Value	0.887		Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.116		95% H-UCL	0.27
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.168
	95% Adjusted-CLT UCL	0.134		97.5% Chebyshev (MVUE) UCL	0.215
	95% Modified-t UCL	0.12		99% Chebyshev (MVUE) UCL	0.309
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.48	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.138			
	nu star	15.36			
	Approximate Chi Square Value (.05)	7.512	Nonparametric Statistics		
	Adjusted Level of Significance	0.0335		95% CLT UCL	0.113
	Adjusted Chi Square Value	6.895		95% Jackknife UCL	0.116
				95% Standard Bootstrap UCL	0.113
	Anderson-Darling Test Statistic	1.831		95% Bootstrap-t UCL	0.184
	Anderson-Darling 5% Critical Value	0.793		95% Hall's Bootstrap UCL	0.279
	Kolmogorov-Smirnov Test Statistic	0.36		95% Percentile Bootstrap UCL	0.117
	Kolmogorov-Smirnov 5% Critical Value	0.227		95% BCA Bootstrap UCL	0.144
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.191
				97.5% Chebyshev(Mean, Sd) UCL	0.245
				99% Chebyshev(Mean, Sd) UCL	0.352
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	0.135			
	95% Adjusted Gamma UCL	0.147			
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	0.352

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics					
	Number of Valid Samples	16		Number of Unique Samples	16
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0043		Minimum of Log Data	-5.443
	Maximum	0.611		Maximum of Log Data	-0.493
	Mean	0.1		Mean of log Data	-3.526
	Median	0.0371		SD of log Data	1.76

SD	0.157		
Coefficient of Variation	1.565		
Skewness	2.573		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.66	Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.169	95% H-UCL	0.867
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.367
95% Adjusted-CLT UCL	0.192	97.5% Chebyshev (MVUE) UCL	0.476
95% Modified-t UCL	0.173	99% Chebyshev (MVUE) UCL	0.692
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.461	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.218		
nu star	14.74		
Approximate Chi Square Value (.05)	7.082	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.165
Adjusted Chi Square Value	6.485	95% Jackknife UCL	0.169
		95% Standard Bootstrap UCL	0.164
Anderson-Darling Test Statistic	0.881	95% Bootstrap-t UCL	0.234
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	0.418
Kolmogorov-Smirnov Test Statistic	0.25	95% Percentile Bootstrap UCL	0.169
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.193
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.271
		97.5% Chebyshev(Mean, Sd) UCL	0.345
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.491
95% Approximate Gamma UCL	0.209		
95% Adjusted Gamma UCL	0.228		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.491

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics

Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0062	Minimum of Log Data	-5.083
Maximum	0.442	Maximum of Log Data	-0.816
Mean	0.0661	Mean of log Data	-3.851
Median	0.0086	SD of log Data	1.48
SD	0.117		
Coefficient of Variation	1.766		
Skewness	2.643		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.594		Shapiro Wilk Test Statistic		0.805	
Shapiro Wilk Critical Value		0.887		Shapiro Wilk Critical Value		0.887	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.117		95% H-UCL		0.244	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.161	
95% Adjusted-CLT UCL		0.135		97.5% Chebyshev (MVUE) UCL		0.206	
95% Modified-t UCL		0.121		99% Chebyshev (MVUE) UCL		0.294	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.49		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.135					
nu star		15.66					
Approximate Chi Square Value (.05)		7.726		Nonparametric Statistics			
Adjusted Level of Significance		0.0335		95% CLT UCL		0.114	
Adjusted Chi Square Value		7.099		95% Jackknife UCL		0.117	
				95% Standard Bootstrap UCL		0.112	
Anderson-Darling Test Statistic		1.602		95% Bootstrap-t UCL		0.217	
Anderson-Darling 5% Critical Value		0.792		95% Hall's Bootstrap UCL		0.304	
Kolmogorov-Smirnov Test Statistic		0.303		95% Percentile Bootstrap UCL		0.117	
Kolmogorov-Smirnov 5% Critical Value		0.226		95% BCA Bootstrap UCL		0.142	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.193	
				97.5% Chebyshev(Mean, Sd) UCL		0.248	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.357	
95% Approximate Gamma UCL		0.134					
95% Adjusted Gamma UCL		0.146					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.357	
Result or 1/2 SDL (benzo(k)fluoranthene)							
General Statistics							
Number of Valid Samples		16		Number of Unique Samples		15	
Raw Statistics				Log-transformed Statistics			
Minimum		0.0095		Minimum of Log Data		-4.651	
Maximum		0.318		Maximum of Log Data		-1.146	
Mean		0.0589		Mean of log Data		-3.644	
Median		0.0122		SD of log Data		1.253	
SD		0.0853					
Coefficient of Variation		1.447					
Skewness		2.204					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.659		Shapiro Wilk Test Statistic		0.773	
Shapiro Wilk Critical Value		0.887		Shapiro Wilk Critical Value		0.887	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0963		95% H-UCL		0.157	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.135	
95% Adjusted-CLT UCL		0.107		97.5% Chebyshev (MVUE) UCL		0.17	
95% Modified-t UCL		0.0983		99% Chebyshev (MVUE) UCL		0.24	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.641		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0919					
nu star		20.52					
Approximate Chi Square Value (.05)		11.24		Nonparametric Statistics			
Adjusted Level of Significance		0.0335		95% CLT UCL		0.094	
Adjusted Chi Square Value		10.46		95% Jackknife UCL		0.0963	
				95% Standard Bootstrap UCL		0.0921	
Anderson-Darling Test Statistic		1.775		95% Bootstrap-t UCL		0.129	
Anderson-Darling 5% Critical Value		0.776		95% Hall's Bootstrap UCL		0.122	
Kolmogorov-Smirnov Test Statistic		0.35		95% Percentile Bootstrap UCL		0.0958	
Kolmogorov-Smirnov 5% Critical Value		0.223		95% BCA Bootstrap UCL		0.108	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.152	
				97.5% Chebyshev(Mean, Sd) UCL		0.192	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.271	
95% Approximate Gamma UCL		0.108					
95% Adjusted Gamma UCL		0.116					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.271	

Result or 1/2 SDL (beryllium)

General Statistics			
Number of Valid Samples		16	Number of Unique Samples 12
Raw Statistics		Log-transformed Statistics	
Minimum	0.29	Minimum of Log Data	-1.238
Maximum	0.82	Maximum of Log Data	-0.198
Mean	0.463	Mean of log Data	-0.815
Median	0.42	SD of log Data	0.307
SD	0.149		
Coefficient of Variation	0.322		
Skewness	0.894		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.905	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	0.539
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.619
95% Adjusted-CLT UCL		97.5% Chebyshev (MVUE) UCL	0.687
95% Modified-t UCL		99% Chebyshev (MVUE) UCL	0.821

Gamma Distribution Test				Data Distribution			
k star (bias corrected)		9.119		Data appear Normal at 5% Significance Level			
Theta Star		0.0508					
nu star		291.8					
Approximate Chi Square Value (.05)		253.2		Nonparametric Statistics			
Adjusted Level of Significance		0.0335		95% CLT UCL		0.524	
Adjusted Chi Square Value		249.2		95% Jackknife UCL		0.528	
				95% Standard Bootstrap UCL		0.523	
Anderson-Darling Test Statistic		0.452		95% Bootstrap-t UCL		0.541	
Anderson-Darling 5% Critical Value		0.739		95% Hall's Bootstrap UCL		0.541	
Kolmogorov-Smirnov Test Statistic		0.161		95% Percentile Bootstrap UCL		0.523	
Kolmogorov-Smirnov 5% Critical Value		0.215		95% BCA Bootstrap UCL		0.532	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.625	
				97.5% Chebyshev(Mean, Sd) UCL		0.696	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.834	
95% Approximate Gamma UCL		0.534					
95% Adjusted Gamma UCL		0.542					
Potential UCL to Use				Use 95% Student's-t UCL		0.528	
Result or 1/2 SDL (boron)							
General Statistics							
Number of Valid Samples		16		Number of Unique Samples		16	
Raw Statistics				Log-transformed Statistics			
Minimum		0.675		Minimum of Log Data		-0.393	
Maximum		27.2		Maximum of Log Data		3.303	
Mean		12.04		Mean of log Data		1.699	
Median		13.45		SD of log Data		1.616	
SD		9.92					
Coefficient of Variation		0.824					
Skewness		-0.0194					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.856		Shapiro Wilk Test Statistic		0.735	
Shapiro Wilk Critical Value		0.887		Shapiro Wilk Critical Value		0.887	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		16.39		95% H-UCL		97.34	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		52.5	
95% Adjusted-CLT UCL		16.11		97.5% Chebyshev (MVUE) UCL		67.76	
95% Modified-t UCL		16.39		99% Chebyshev (MVUE) UCL		97.73	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.657		Data do not follow a Discernable Distribution (0.05)			
Theta Star		18.32					
nu star		21.03					

Approximate Chi Square Value (.05)	11.62	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	16.12
Adjusted Chi Square Value	10.83	95% Jackknife UCL	16.39
		95% Standard Bootstrap UCL	16.06
Anderson-Darling Test Statistic	1.705	95% Bootstrap-t UCL	16.58
Anderson-Darling 5% Critical Value	0.774	95% Hall's Bootstrap UCL	16.03
Kolmogorov-Smirnov Test Statistic	0.288	95% Percentile Bootstrap UCL	15.89
Kolmogorov-Smirnov 5% Critical Value	0.223	95% BCA Bootstrap UCL	15.84
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.85
		97.5% Chebyshev(Mean, Sd) UCL	27.53
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	36.72
95% Approximate Gamma UCL	21.81		
95% Adjusted Gamma UCL	23.4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	36.72
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (butyl benzyl phthalate)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0076	Minimum of Log Data	-4.873
Maximum	0.202	Maximum of Log Data	-1.599
Mean	0.0208	Mean of log Data	-4.553
Median	0.0082	SD of log Data	0.798
SD	0.0483		
Coefficient of Variation	2.323		
Skewness	3.996		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk Test Statistic	0.405
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.042	95% H-UCL	0.0238
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0273
95% Adjusted-CLT UCL	0.0536	97.5% Chebyshev (MVUE) UCL	0.033
95% Modified-t UCL	0.044	99% Chebyshev (MVUE) UCL	0.0442
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.743	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.028		
nu star	23.78		
Approximate Chi Square Value (.05)	13.68	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0407
Adjusted Chi Square Value	12.82	95% Jackknife UCL	0.042
		95% Standard Bootstrap UCL	0.0398

Anderson-Darling Test Statistic	4.868	95% Bootstrap-t UCL	0.642
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	0.369
Kolmogorov-Smirnov Test Statistic	0.499	95% Percentile Bootstrap UCL	0.0449
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	0.0575
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0735
		97.5% Chebyshev(Mean, Sd) UCL	0.0963
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.141
95% Approximate Gamma UCL	0.0362		
95% Adjusted Gamma UCL	0.0386		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0735

Result or 1/2 SDL (carbazole)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0060	Minimum of Log Data	-5.108
Maximum	0.0861	Maximum of Log Data	-2.452
Mean	0.0151	Mean of log Data	-4.632
Median	0.0069	SD of log Data	0.79
SD	0.0214		
Coefficient of Variation	1.413		
Skewness	2.948		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.49	Shapiro Wilk Test Statistic	0.64
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0245	95% H-UCL	0.0217
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0249
95% Adjusted-CLT UCL	0.0281	97.5% Chebyshev (MVUE) UCL	0.0301
95% Modified-t UCL	0.0252	99% Chebyshev (MVUE) UCL	0.0402

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.076	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0141		
nu star	34.44		
Approximate Chi Square Value (.05)	22.01	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0239
Adjusted Chi Square Value	20.89	95% Jackknife UCL	0.0245
		95% Standard Bootstrap UCL	0.0235
Anderson-Darling Test Statistic	3.042	95% Bootstrap-t UCL	0.0644
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	0.0724
Kolmogorov-Smirnov Test Statistic	0.416	95% Percentile Bootstrap UCL	0.0249
Kolmogorov-Smirnov 5% Critical Value	0.22	95% BCA Bootstrap UCL	0.0304
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0384

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Result or 1/2 SDL (chloroform)

General Statistics					
Number of Valid Samples		16	Number of Unique Samples		15
Raw Statistics			Log-transformed Statistics		
Minimum		1.1400E-4	Minimum of Log Data		-9.079
Maximum		0.0052	Maximum of Log Data		-5.246
Mean		9.0178E-4	Mean of log Data		-7.93
Median		2.2100E-4	SD of log Data		1.189
SD		0.0016			
Coefficient of Variation		1.851			
Skewness		2.462			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.486	Shapiro Wilk Test Statistic		0.796
Shapiro Wilk Critical Value		0.887	Shapiro Wilk Critical Value		0.887
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0016	95% H-UCL		0.0018
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0016
95% Adjusted-CLT UCL		0.0018	97.5% Chebyshev (MVUE) UCL		0.0021
95% Modified-t UCL		0.0016	99% Chebyshev (MVUE) UCL		0.0029
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.58	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.0015			
nu star		18.56			
Approximate Chi Square Value (.05)		9.799	Nonparametric Statistics		
Adjusted Level of Significance		0.0335	95% CLT UCL		0.0015
Adjusted Chi Square Value		9.081	95% Jackknife UCL		0.0016
			95% Standard Bootstrap UCL		0.0015
Anderson-Darling Test Statistic		2.224	95% Bootstrap-t UCL		0.0066
Anderson-Darling 5% Critical Value		0.782	95% Hall's Bootstrap UCL		0.0061
Kolmogorov-Smirnov Test Statistic		0.358	95% Percentile Bootstrap UCL		0.0015
Kolmogorov-Smirnov 5% Critical Value		0.225	95% BCA Bootstrap UCL		0.0018
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.0027
			97.5% Chebyshev(Mean, Sd) UCL		0.0035
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0050
95% Approximate Gamma UCL		0.0017			
95% Adjusted Gamma UCL		0.0018			

Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.0050
Result or 1/2 SDL (chromium)				
General Statistics				
Number of Valid Samples		16	Number of Unique Samples 15	
Raw Statistics		Log-transformed Statistics		
Minimum	5.01	Minimum of Log Data	1.611	
Maximum	14.4	Maximum of Log Data	2.667	
Mean	9.214	Mean of log Data	2.177	
Median	10.19	SD of log Data	0.314	
SD	2.644			
Coefficient of Variation	0.287			
Skewness	-0.17			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.902	Shapiro Wilk Test Statistic	0.873	
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887	
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	10.37	95% H-UCL	10.8	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.44	
95% Adjusted-CLT UCL	10.27	97.5% Chebyshev (MVUE) UCL	13.83	
95% Modified-t UCL	10.37	99% Chebyshev (MVUE) UCL	16.55	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	9.542	Data appear Normal at 5% Significance Level		
Theta Star	0.966			
nu star	305.3			
Approximate Chi Square Value (.05)	265.9	Nonparametric Statistics		
Adjusted Level of Significance	0.0335	95% CLT UCL	10.3	
Adjusted Chi Square Value	261.7	95% Jackknife UCL	10.37	
		95% Standard Bootstrap UCL	10.24	
Anderson-Darling Test Statistic	0.99	95% Bootstrap-t UCL	10.32	
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	10.26	
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	10.21	
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	10.2	
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.09	
		97.5% Chebyshev(Mean, Sd) UCL	13.34	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	15.79	
95% Approximate Gamma UCL	10.58			
95% Adjusted Gamma UCL	10.75			
Potential UCL to Use		Use 95% Student's-t UCL		10.37
Result or 1/2 SDL (chrysene)				

General Statistics			
Number of Valid Samples		16	Number of Unique Samples
			15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0054	Minimum of Log Data	-5.212
Maximum	0.475	Maximum of Log Data	-0.744
Mean	0.0774	Mean of log Data	-3.614
Median	0.0177	SD of log Data	1.522
SD	0.123		
Coefficient of Variation	1.585		
Skewness	2.577		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.649	Shapiro Wilk Test Statistic	0.886
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.131	95% H-UCL	0.353
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.219
95% Adjusted-CLT UCL	0.149	97.5% Chebyshev (MVUE) UCL	0.281
95% Modified-t UCL	0.134	99% Chebyshev (MVUE) UCL	0.404
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.519	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.149		
nu star	16.62		
Approximate Chi Square Value (.05)	8.399	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.128
Adjusted Chi Square Value	7.741	95% Jackknife UCL	0.131
		95% Standard Bootstrap UCL	0.125
Anderson-Darling Test Statistic	0.903	95% Bootstrap-t UCL	0.186
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	0.311
Kolmogorov-Smirnov Test Statistic	0.206	95% Percentile Bootstrap UCL	0.126
Kolmogorov-Smirnov 5% Critical Value	0.226	95% BCA Bootstrap UCL	0.16
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.211
		97.5% Chebyshev(Mean, Sd) UCL	0.269
		99% Chebyshev(Mean, Sd) UCL	0.382
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.153		
95% Adjusted Gamma UCL	0.166		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.153

Result or 1/2 SDL (cobalt)

General Statistics			
Number of Valid Samples		16	Number of Unique Samples
			16
Raw Statistics		Log-transformed Statistics	
Minimum	3.05	Minimum of Log Data	1.115

Maximum	7.16	Maximum of Log Data	1.969
Mean	4.385	Mean of log Data	1.449
Median	4.06	SD of log Data	0.245
SD	1.131		
Coefficient of Variation	0.258		
Skewness	0.956		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.916	Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.881	95% H-UCL	4.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.562
95% Adjusted-CLT UCL	4.922	97.5% Chebyshev (MVUE) UCL	6.073
95% Modified-t UCL	4.892	99% Chebyshev (MVUE) UCL	7.077
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.16	Data appear Normal at 5% Significance Level	
Theta Star	0.31		
nu star	453.1		
Approximate Chi Square Value (.05)	404.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	4.85
Adjusted Chi Square Value	399.6	95% Jackknife UCL	4.881
		95% Standard Bootstrap UCL	4.824
Anderson-Darling Test Statistic	0.352	95% Bootstrap-t UCL	4.955
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	4.97
Kolmogorov-Smirnov Test Statistic	0.129	95% Percentile Bootstrap UCL	4.846
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	4.865
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.618
		97.5% Chebyshev(Mean, Sd) UCL	6.151
		99% Chebyshev(Mean, Sd) UCL	7.198
Assuming Gamma Distribution			
95% Approximate Gamma UCL	4.909		
95% Adjusted Gamma UCL	4.973		
Potential UCL to Use		Use 95% Student's-t UCL	4.881

Result or 1/2 SDL (copper)

General Statistics

Number of Valid Samples		16	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum	3.28		Minimum of Log Data	1.188	
Maximum	12.6		Maximum of Log Data	2.534	
Mean	7.112		Mean of log Data	1.87	
Median	6.655		SD of log Data	0.456	
SD	2.997				
Coefficient of Variation	0.421				

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Result or 1/2 SDL (cyclohexane)

General Statistics					
Number of Valid Samples		16	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum		8.9500E-4	Minimum of Log Data		-7.019
Maximum		0.0042	Maximum of Log Data		-5.46
Mean		0.0023	Mean of log Data		-6.214
Median		0.0017	SD of log Data		0.55
SD		0.0013			
Coefficient of Variation		0.561			
Skewness		0.694			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.793	Shapiro Wilk Test Statistic		0.872

Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0028	95% H-UCL	0.0031
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0037
95% Adjusted-CLT UCL	0.0029	97.5% Chebyshev (MVUE) UCL	0.0043
95% Modified-t UCL	0.0028	99% Chebyshev (MVUE) UCL	0.0055
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.996	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.7140E-4		
nu star	95.86		
Approximate Chi Square Value (.05)	74.28	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0028
Adjusted Chi Square Value	72.12	95% Jackknife UCL	0.0028
		95% Standard Bootstrap UCL	0.0028
Anderson-Darling Test Statistic	1.082	95% Bootstrap-t UCL	0.0029
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.0027
Kolmogorov-Smirnov Test Statistic	0.215	95% Percentile Bootstrap UCL	0.0028
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0029
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0037
		97.5% Chebyshev(Mean, Sd) UCL	0.0043
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0055
95% Approximate Gamma UCL	0.0029		
95% Adjusted Gamma UCL	0.0030		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0029

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.0059	Minimum of Log Data	-5.133
Maximum	0.235	Maximum of Log Data	-1.448
Mean	0.0435	Mean of log Data	-4.041
Median	0.0078	SD of log Data	1.342
SD	0.0649		
Coefficient of Variation	1.491		
Skewness	2.176		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.652	Shapiro Wilk Test Statistic	0.766
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0719	95% H-UCL	0.135

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.105
95% Adjusted-CLT UCL	0.0796	97.5% Chebyshev (MVUE) UCL		0.133
95% Modified-t UCL	0.0734	99% Chebyshev (MVUE) UCL		0.189
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.587	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0742			
nu star	18.77			
Approximate Chi Square Value (.05)	9.952	Nonparametric Statistics		
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0702	
Adjusted Chi Square Value	9.227	95% Jackknife UCL	0.0719	
		95% Standard Bootstrap UCL	0.0692	
Anderson-Darling Test Statistic	1.818	95% Bootstrap-t UCL	0.106	
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	0.19	
Kolmogorov-Smirnov Test Statistic	0.358	95% Percentile Bootstrap UCL	0.0702	
Kolmogorov-Smirnov 5% Critical Value	0.224	95% BCA Bootstrap UCL	0.0813	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.114	
		97.5% Chebyshev(Mean, Sd) UCL	0.145	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.205	
95% Approximate Gamma UCL	0.0821			
95% Adjusted Gamma UCL	0.0885			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.205	

Result or 1/2 SDL (dibenzofuran)

General Statistics					
Number of Valid Samples		16	Number of Unique Samples		14
Raw Statistics			Log-transformed Statistics		
Minimum		0.0086	Minimum of Log Data		-4.75
Maximum		0.0305	Maximum of Log Data		-3.49
Mean		0.0123	Mean of log Data		-4.486
Median		0.0096	SD of log Data		0.386
SD		0.0065			
Coefficient of Variation		0.534			
Skewness		2.369			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.579	Shapiro Wilk Test Statistic		0.678
Shapiro Wilk Critical Value		0.887	Shapiro Wilk Critical Value		0.887
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0152	95% H-UCL		0.0147
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0172
95% Adjusted-CLT UCL		0.016	97.5% Chebyshev (MVUE) UCL		0.0195
95% Modified-t UCL		0.0153	99% Chebyshev (MVUE) UCL		0.0239
Gamma Distribution Test			Data Distribution		

k star (bias corrected)	4.848	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0025		
nu star	155.2		
Approximate Chi Square Value (.05)	127.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.015
Adjusted Chi Square Value	124.5	95% Jackknife UCL	0.0152
		95% Standard Bootstrap UCL	0.0149
Anderson-Darling Test Statistic	2.403	95% Bootstrap-t UCL	0.0241
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	0.0298
Kolmogorov-Smirnov Test Statistic	0.304	95% Percentile Bootstrap UCL	0.015
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	0.0162
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0194
		97.5% Chebyshev(Mean, Sd) UCL	0.0225
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0286
95% Approximate Gamma UCL	0.015		
95% Adjusted Gamma UCL	0.0153		
Potential UCL to Use		Use 95% Student's-t UCL	0.0152
		or 95% Modified-t UCL	0.0153

Result or 1/2 SDL (diethyl phthalate)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0104	Minimum of Log Data	-4.566
Maximum	0.0389	Maximum of Log Data	-3.247
Mean	0.0135	Mean of log Data	-4.369
Median	0.0112	SD of log Data	0.326
SD	0.0069		
Coefficient of Variation	0.513		
Skewness	3.652		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.461	Shapiro Wilk Test Statistic	0.602
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0166	95% H-UCL	0.0157
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0181
95% Adjusted-CLT UCL	0.0181	97.5% Chebyshev (MVUE) UCL	0.0202
95% Modified-t UCL	0.0169	99% Chebyshev (MVUE) UCL	0.0242
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.232	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0021		
nu star	199.4		
Approximate Chi Square Value (.05)	167.8	Nonparametric Statistics	

Adjusted Level of Significance	0.0335	95% CLT UCL	0.0164
Adjusted Chi Square Value	164.5	95% Jackknife UCL	0.0166
		95% Standard Bootstrap UCL	0.0162
Anderson-Darling Test Statistic	2.57	95% Bootstrap-t UCL	0.0251
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	0.0261
Kolmogorov-Smirnov Test Statistic	0.283	95% Percentile Bootstrap UCL	0.0167
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0185
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0211
		97.5% Chebyshev(Mean, Sd) UCL	0.0244
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0308
95% Approximate Gamma UCL	0.0161		
95% Adjusted Gamma UCL	0.0164		
Potential UCL to Use		Use 95% Student's-t UCL	0.0166
		or 95% Modified-t UCL	0.0169

Result or 1/2 SDL (di-n-octyl phthalate)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.0051	Minimum of Log Data	-5.279
Maximum	0.192	Maximum of Log Data	-1.65
Mean	0.018	Mean of log Data	-4.875
Median	0.0056	SD of log Data	0.9
SD	0.0465		
Coefficient of Variation	2.577		
Skewness	3.983		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.303	Shapiro Wilk Test Statistic	0.476
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0384	95% H-UCL	0.0208
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0228
95% Adjusted-CLT UCL	0.0495	97.5% Chebyshev (MVUE) UCL	0.0279
95% Modified-t UCL	0.0403	99% Chebyshev (MVUE) UCL	0.038
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.613	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0294		
nu star	19.61		
Approximate Chi Square Value (.05)	10.57	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0371
Adjusted Chi Square Value	9.817	95% Jackknife UCL	0.0384
		95% Standard Bootstrap UCL	0.0368
Anderson-Darling Test Statistic	4.473	95% Bootstrap-t UCL	0.744

Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	0.313
Kolmogorov-Smirnov Test Statistic	0.468	95% Percentile Bootstrap UCL	0.041
Kolmogorov-Smirnov 5% Critical Value	0.224	95% BCA Bootstrap UCL	0.0529
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0686
		97.5% Chebyshev(Mean, Sd) UCL	0.0906
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.134
95% Approximate Gamma UCL	0.0335		
95% Adjusted Gamma UCL	0.036		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0686

Result or 1/2 SDL (fluoranthene)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	0.0068	Minimum of Log Data	-4.984
Maximum	0.804	Maximum of Log Data	-0.218
Mean	0.113	Mean of log Data	-3.442
Median	0.016	SD of log Data	1.651
SD	0.201		
Coefficient of Variation	1.786		
Skewness	3.01		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.577	Shapiro Wilk Test Statistic	0.826
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.201	95% H-UCL	0.642
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.327
95% Adjusted-CLT UCL	0.236	97.5% Chebyshev (MVUE) UCL	0.423
95% Modified-t UCL	0.207	99% Chebyshev (MVUE) UCL	0.611
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.451	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.25		
nu star	14.44		
Approximate Chi Square Value (.05)	6.872	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.196
Adjusted Chi Square Value	6.285	95% Jackknife UCL	0.201
		95% Standard Bootstrap UCL	0.194
Anderson-Darling Test Statistic	1.352	95% Bootstrap-t UCL	0.306
Anderson-Darling 5% Critical Value	0.796	95% Hall's Bootstrap UCL	0.492
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	0.201
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.236
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.332
		97.5% Chebyshev(Mean, Sd) UCL	0.427

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.614
95% Approximate Gamma UCL	0.237			
95% Adjusted Gamma UCL	0.259			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.614

Result or 1/2 SDL (fluorene)

General Statistics			
Number of Valid Samples		16	
		Number of Unique Samples	
		15	
Raw Statistics		Log-transformed Statistics	
Minimum	0.006	Minimum of Log Data	-5.116
Maximum	0.046	Maximum of Log Data	-3.079
Mean	0.0122	Mean of log Data	-4.65
Median	0.0073	SD of log Data	0.63
SD	0.0111		
Coefficient of Variation	0.916		
Skewness	2.347		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.612	Shapiro Wilk Test Statistic	0.739
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.017	95% H-UCL	0.0167
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0198
95% Adjusted-CLT UCL	0.0185	97.5% Chebyshev (MVUE) UCL	0.0233
95% Modified-t UCL	0.0173	99% Chebyshev (MVUE) UCL	0.0304

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.859	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0065		
nu star	59.5		
Approximate Chi Square Value (.05)	42.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0167
Adjusted Chi Square Value	41.15	95% Jackknife UCL	0.017
		95% Standard Bootstrap UCL	0.0166
Anderson-Darling Test Statistic	2.153	95% Bootstrap-t UCL	0.022
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	0.018
Kolmogorov-Smirnov Test Statistic	0.349	95% Percentile Bootstrap UCL	0.0169
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0194
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0243
		97.5% Chebyshev(Mean, Sd) UCL	0.0295
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0398
95% Approximate Gamma UCL	0.0169		
95% Adjusted Gamma UCL	0.0176		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0243

Number of Valid Samples				16	Number of Unique Samples				14
Raw Statistics					Log-transformed Statistics				
	Minimum	0.0075				Minimum of Log Data	-4.893		
	Maximum	0.0319				Maximum of Log Data	-3.445		
	Mean	0.01				Mean of log Data	-4.686		
	Median	0.0081				SD of log Data	0.355		
	SD	0.0059							
	Coefficient of Variation	0.593							
	Skewness	3.745							
Relevant UCL Statistics									
Normal Distribution Test					Lognormal Distribution Test				
	Shapiro Wilk Test Statistic	0.433				Shapiro Wilk Test Statistic	0.579		
	Shapiro Wilk Critical Value	0.887				Shapiro Wilk Critical Value	0.887		
Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution					Assuming Lognormal Distribution				
	95% Student's-t UCL	0.0126				95% H-UCL	0.0117		
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	0.0136		
	95% Adjusted-CLT UCL	0.014				97.5% Chebyshev (MVUE) UCL	0.0153		
	95% Modified-t UCL	0.0129				99% Chebyshev (MVUE) UCL	0.0186		
Gamma Distribution Test					Data Distribution				
	k star (bias corrected)	5.058			Data do not follow a Discernable Distribution (0.05)				
	Theta Star	0.0019							
	nu star	161.9							
	Approximate Chi Square Value (.05)	133.4			Nonparametric Statistics				
	Adjusted Level of Significance	0.0335				95% CLT UCL	0.0125		
	Adjusted Chi Square Value	130.5				95% Jackknife UCL	0.0126		
						95% Standard Bootstrap UCL	0.0123		
	Anderson-Darling Test Statistic	2.793				95% Bootstrap-t UCL	0.0208		
	Anderson-Darling 5% Critical Value	0.741				95% Hall's Bootstrap UCL	0.021		
	Kolmogorov-Smirnov Test Statistic	0.307				95% Percentile Bootstrap UCL	0.0128		
	Kolmogorov-Smirnov 5% Critical Value	0.216				95% BCA Bootstrap UCL	0.0146		
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	0.0165		
Assuming Gamma Distribution						97.5% Chebyshev(Mean, Sd) UCL	0.0193		
	95% Approximate Gamma UCL	0.0122				99% Chebyshev(Mean, Sd) UCL	0.0248		
	95% Adjusted Gamma UCL	0.0124							
Potential UCL to Use						Use 95% Student's-t UCL	0.0126		
						or 95% Modified-t UCL	0.0129		

Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)

General Statistics									
Number of Valid Samples				16	Number of Unique Samples				16
Raw Statistics					Log-transformed Statistics				
	Minimum	0.0099				Minimum of Log Data	-4.615		

Maximum	0.405	Maximum of Log Data	-0.904
Mean	0.0722	Mean of log Data	-3.552
Median	0.0126	SD of log Data	1.335
SD	0.111		
Coefficient of Variation	1.532		
Skewness	2.205		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.644	Shapiro Wilk Test Statistic	0.769
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.121	95% H-UCL	0.215
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.169
95% Adjusted-CLT UCL	0.134	97.5% Chebyshev (MVUE) UCL	0.215
95% Modified-t UCL	0.123	99% Chebyshev (MVUE) UCL	0.304
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.577	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.125		
nu star	18.48		
Approximate Chi Square Value (.05)	9.738	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.118
Adjusted Chi Square Value	9.022	95% Jackknife UCL	0.121
		95% Standard Bootstrap UCL	0.117
Anderson-Darling Test Statistic	1.828	95% Bootstrap-t UCL	0.173
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	0.141
Kolmogorov-Smirnov Test Statistic	0.352	95% Percentile Bootstrap UCL	0.12
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.134
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.193
		97.5% Chebyshev(Mean, Sd) UCL	0.245
		99% Chebyshev(Mean, Sd) UCL	0.347
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.137		
95% Adjusted Gamma UCL	0.148		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.347

Result or 1/2 SDL (iron)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	6750	Minimum of Log Data	8.817
Maximum	28200	Maximum of Log Data	10.25
Mean	13352	Mean of log Data	9.427
Median	13200	SD of log Data	0.389
SD	5546		
Coefficient of Variation	0.415		

Skewness				1.341				
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
Shapiro Wilk Test Statistic		0.873		Shapiro Wilk Test Statistic		0.944		
Shapiro Wilk Critical Value		0.887		Shapiro Wilk Critical Value		0.887		
Data not Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL		15782		95% H-UCL		16280		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		19078		
95% Adjusted-CLT UCL		16129		97.5% Chebyshev (MVUE) UCL		21568		
95% Modified-t UCL		15860		99% Chebyshev (MVUE) UCL		26460		
Gamma Distribution Test				Data Distribution				
k star (bias corrected)		5.759		Data appear Gamma Distributed at 5% Significance Level				
Theta Star		2318						
nu star		184.3						
Approximate Chi Square Value (.05)		153.9		Nonparametric Statistics				
Adjusted Level of Significance		0.0335		95% CLT UCL		15632		
Adjusted Chi Square Value		150.7		95% Jackknife UCL		15782		
				95% Standard Bootstrap UCL		15544		
Anderson-Darling Test Statistic		0.495		95% Bootstrap-t UCL		16816		
Anderson-Darling 5% Critical Value		0.74		95% Hall's Bootstrap UCL		18440		
Kolmogorov-Smirnov Test Statistic		0.198		95% Percentile Bootstrap UCL		15673		
Kolmogorov-Smirnov 5% Critical Value		0.216		95% BCA Bootstrap UCL		16268		
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		19395		
				97.5% Chebyshev(Mean, Sd) UCL		22010		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		27146		
95% Approximate Gamma UCL		15989						
95% Adjusted Gamma UCL		16325						
Potential UCL to Use				Use 95% Approximate Gamma UCL		15989		

Result or 1/2 SDL (isopropylbenzene (cumene))

General Statistics					
Number of Valid Samples		16	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum		1.2400E-4	Minimum of Log Data		-8.995
Maximum		0.0070	Maximum of Log Data		-4.956
Mean		0.0010	Mean of log Data		-7.845
Median		2.4000E-4	SD of log Data		1.198
SD		0.0019			
Coefficient of Variation		1.926			
Skewness		2.71			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.493	Shapiro Wilk Test Statistic		0.804

Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0018	95% H-UCL	0.0020
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0018
95% Adjusted-CLT UCL	0.0021	97.5% Chebyshev (MVUE) UCL	0.0023
95% Modified-t UCL	0.0019	99% Chebyshev (MVUE) UCL	0.0032
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.566	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0017		
nu star	18.12		
Approximate Chi Square Value (.05)	9.479	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0018
Adjusted Chi Square Value	8.774	95% Jackknife UCL	0.0018
		95% Standard Bootstrap UCL	0.0018
Anderson-Darling Test Statistic	2.176	95% Bootstrap-t UCL	0.0081
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	0.0068
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	0.0018
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.0022
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0031
		97.5% Chebyshev(Mean, Sd) UCL	0.0040
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0058
95% Approximate Gamma UCL	0.0019		
95% Adjusted Gamma UCL	0.0020		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0058

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	5	Minimum of Log Data	1.609
Maximum	32.3	Maximum of Log Data	3.475
Mean	11.56	Mean of log Data	2.311
Median	10.03	SD of log Data	0.512
SD	7.161		
Coefficient of Variation	0.62		
Skewness	2.013		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.774	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.69	95% H-UCL	15.11

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		17.95
95% Adjusted-CLT UCL	15.46	97.5% Chebyshev (MVUE) UCL		20.79
95% Modified-t UCL	14.84	99% Chebyshev (MVUE) UCL		26.37
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	3.16	Data appear Gamma Distributed at 5% Significance Level		
Theta Star	3.657			
nu star	101.1			
Approximate Chi Square Value (.05)	78.92	Nonparametric Statistics		
Adjusted Level of Significance	0.0335	95% CLT UCL		14.5
Adjusted Chi Square Value	76.69	95% Jackknife UCL		14.69
		95% Standard Bootstrap UCL		14.4
Anderson-Darling Test Statistic	0.574	95% Bootstrap-t UCL		17.86
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL		31.55
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL		14.56
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL		15.63
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		19.36
		97.5% Chebyshev(Mean, Sd) UCL		22.74
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		29.37
95% Approximate Gamma UCL	14.81			
95% Adjusted Gamma UCL	15.24			
Potential UCL to Use		Use 95% Approximate Gamma UCL		14.81

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	6.4	Minimum of Log Data	1.856
Maximum	20	Maximum of Log Data	2.996
Mean	10.53	Mean of log Data	2.306
Median	9.88	SD of log Data	0.314
SD	3.559		
Coefficient of Variation	0.338		
Skewness	1.247		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	12.09	95% H-UCL	12.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.16
95% Adjusted-CLT UCL	12.29	97.5% Chebyshev (MVUE) UCL	15.73
95% Modified-t UCL	12.14	99% Chebyshev (MVUE) UCL	18.83
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	8.624	Data appear Normal at 5% Significance Level	
Theta Star	1.221		
nu star	276		
Approximate Chi Square Value (.05)	238.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	12
Adjusted Chi Square Value	234.5	95% Jackknife UCL	12.09
		95% Standard Bootstrap UCL	11.95
Anderson-Darling Test Statistic	0.319	95% Bootstrap-t UCL	12.55
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	12.89
Kolmogorov-Smirnov Test Statistic	0.119	95% Percentile Bootstrap UCL	11.96
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	12.23
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.41
		97.5% Chebyshev(Mean, Sd) UCL	16.09
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	19.39
95% Approximate Gamma UCL	12.19		
95% Adjusted Gamma UCL	12.39		
Potential UCL to Use		Use 95% Student's-t UCL	12.09

Result or 1/2 SDL (manganese)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	192	Minimum of Log Data	5.257
Maximum	474	Maximum of Log Data	6.161
Mean	283.3	Mean of log Data	5.603
Median	275	SD of log Data	0.301
SD	87.59		
Coefficient of Variation	0.309		
Skewness	0.667		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	321.6	95% H-UCL	328.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	377.1
95% Adjusted-CLT UCL	323.2	97.5% Chebyshev (MVUE) UCL	417.8
95% Modified-t UCL	322.2	99% Chebyshev (MVUE) UCL	497.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.583	Data appear Normal at 5% Significance Level	
Theta Star	29.56		
nu star	306.7		
Approximate Chi Square Value (.05)	267.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	319.3

Adjusted Chi Square Value	262.9	95% Jackknife UCL	321.6
		95% Standard Bootstrap UCL	318.6
Anderson-Darling Test Statistic	0.707	95% Bootstrap-t UCL	324.1
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	322.7
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	319.3
Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	322.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	378.7
		97.5% Chebyshev(Mean, Sd) UCL	420
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	501.1
95% Approximate Gamma UCL	325.2		
95% Adjusted Gamma UCL	330.4		
Potential UCL to Use		Use 95% Student's-t UCL	321.6

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.011	Minimum of Log Data	-4.51
Maximum	0.036	Maximum of Log Data	-3.324
Mean	0.0201	Mean of log Data	-3.972
Median	0.02	SD of log Data	0.367
SD	0.0073		
Coefficient of Variation	0.368		
Skewness	0.618		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0233	95% H-UCL	0.0242
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0282
95% Adjusted-CLT UCL	0.0234	97.5% Chebyshev (MVUE) UCL	0.0318
95% Modified-t UCL	0.0233	99% Chebyshev (MVUE) UCL	0.0387
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.623	Data appear Normal at 5% Significance Level	
Theta Star	0.0030		
nu star	211.9		
Approximate Chi Square Value (.05)	179.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0231
Adjusted Chi Square Value	175.8	95% Jackknife UCL	0.0233
		95% Standard Bootstrap UCL	0.023
Anderson-Darling Test Statistic	0.386	95% Bootstrap-t UCL	0.0239
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	0.0237
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	0.0229

Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	0.0231
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0281
		97.5% Chebyshev(Mean, Sd) UCL	0.0316
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0384
95% Approximate Gamma UCL	0.0237		
95% Adjusted Gamma UCL	0.0242		
Potential UCL to Use		Use 95% Student's-t UCL	0.0233

Result or 1/2 SDL (methylcyclohexane)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	2.9950E-4	Minimum of Log Data	-8.113
Maximum	0.0037	Maximum of Log Data	-5.599
Mean	9.5050E-4	Mean of log Data	-7.232
Median	5.8250E-4	SD of log Data	0.724
SD	8.5690E-4		
Coefficient of Variation	0.902		
Skewness	2.396		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.699	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0013	95% H-UCL	0.0014
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0016
95% Adjusted-CLT UCL	0.0014	97.5% Chebyshev (MVUE) UCL	0.0020
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0026

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.649	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	5.7638E-4		
nu star	52.77		
Approximate Chi Square Value (.05)	37.08	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.0013
Adjusted Chi Square Value	35.59	95% Jackknife UCL	0.0013
		95% Standard Bootstrap UCL	0.0012
Anderson-Darling Test Statistic	0.885	95% Bootstrap-t UCL	0.0016
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	0.0027
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0014
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0018
		97.5% Chebyshev(Mean, Sd) UCL	0.0022
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0030
95% Approximate Gamma UCL	0.0013		

95% Adjusted Gamma UCL	0.0014		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0013

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	0.14	Minimum of Log Data	-1.966
Maximum	5.66	Maximum of Log Data	1.733
Mean	0.667	Mean of log Data	-1.108
Median	0.24	SD of log Data	0.95
SD	1.358		
Coefficient of Variation	2.036		
Skewness	3.761		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.407	Shapiro Wilk Test Statistic	0.774
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.262	95% H-UCL	0.991
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.064
95% Adjusted-CLT UCL	1.566	97.5% Chebyshev (MVUE) UCL	1.308
95% Modified-t UCL	1.315	99% Chebyshev (MVUE) UCL	1.788
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.724	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.922		
nu star	23.15		
Approximate Chi Square Value (.05)	13.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	1.225
Adjusted Chi Square Value	12.36	95% Jackknife UCL	1.262
		95% Standard Bootstrap UCL	1.201
Anderson-Darling Test Statistic	2.348	95% Bootstrap-t UCL	4.4
Anderson-Darling 5% Critical Value	0.771	95% Hall's Bootstrap UCL	3.298
Kolmogorov-Smirnov Test Statistic	0.318	95% Percentile Bootstrap UCL	1.306
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	1.687
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.146
		97.5% Chebyshev(Mean, Sd) UCL	2.786
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.044
95% Approximate Gamma UCL	1.169		
95% Adjusted Gamma UCL	1.25		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	2.146

Result or 1/2 SDL (nickel)					
General Statistics					
Number of Valid Samples		16	Number of Unique Samples		15
Raw Statistics			Log-transformed Statistics		
Minimum		5.8	Minimum of Log Data		1.758
Maximum		16.7	Maximum of Log Data		2.815
Mean		9.589	Mean of log Data		2.223
Median		9.93	SD of log Data		0.283
SD		2.741			
Coefficient of Variation		0.286			
Skewness		0.821			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.899	Shapiro Wilk Test Statistic		0.926
Shapiro Wilk Critical Value		0.887	Shapiro Wilk Critical Value		0.887
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		10.79	95% H-UCL		11.02
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		12.58
95% Adjusted-CLT UCL		10.87	97.5% Chebyshev (MVUE) UCL		13.88
95% Modified-t UCL		10.81	99% Chebyshev (MVUE) UCL		16.42
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		11.02	Data appear Normal at 5% Significance Level		
Theta Star		0.87			
nu star		352.6			
Approximate Chi Square Value (.05)		310.1	Nonparametric Statistics		
Adjusted Level of Significance		0.0335	95% CLT UCL		10.72
Adjusted Chi Square Value		305.5	95% Jackknife UCL		10.79
			95% Standard Bootstrap UCL		10.7
Anderson-Darling Test Statistic		0.57	95% Bootstrap-t UCL		10.95
Anderson-Darling 5% Critical Value		0.738	95% Hall's Bootstrap UCL		11.23
Kolmogorov-Smirnov Test Statistic		0.205	95% Percentile Bootstrap UCL		10.69
Kolmogorov-Smirnov 5% Critical Value		0.215	95% BCA Bootstrap UCL		10.77
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		12.58
			97.5% Chebyshev(Mean, Sd) UCL		13.87
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		16.41
95% Approximate Gamma UCL		10.9			
95% Adjusted Gamma UCL		11.07			
Potential UCL to Use			Use 95% Student's-t UCL		10.79
Result or 1/2 SDL (n-nitrosodiphenylamine)					
General Statistics					
Number of Valid Samples		16	Number of Unique Samples		14

Raw Statistics				Log-transformed Statistics			
	Minimum	0.0069		Minimum of Log Data	-4.969		
	Maximum	0.0434		Maximum of Log Data	-3.137		
	Mean	0.0102		Mean of log Data	-4.738		
	Median	0.0075		SD of log Data	0.446		
	SD	0.0089					
	Coefficient of Variation	0.879					
	Skewness	3.902					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.369		Shapiro Wilk Test Statistic	0.514		
	Shapiro Wilk Critical Value	0.887		Shapiro Wilk Critical Value	0.887		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0141		95% H-UCL	0.0122		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.0144		
	95% Adjusted-CLT UCL	0.0162		97.5% Chebyshev (MVUE) UCL	0.0165		
	95% Modified-t UCL	0.0144		99% Chebyshev (MVUE) UCL	0.0205		
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	2.914		Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0034					
	nu star	93.24					
	Approximate Chi Square Value (.05)	71.97		Nonparametric Statistics			
	Adjusted Level of Significance	0.0335		95% CLT UCL	0.0138		
	Adjusted Chi Square Value	69.85		95% Jackknife UCL	0.0141		
				95% Standard Bootstrap UCL	0.0137		
	Anderson-Darling Test Statistic	3.455		95% Bootstrap-t UCL	0.0353		
	Anderson-Darling 5% Critical Value	0.743		95% Hall's Bootstrap UCL	0.0281		
	Kolmogorov-Smirnov Test Statistic	0.374		95% Percentile Bootstrap UCL	0.0145		
	Kolmogorov-Smirnov 5% Critical Value	0.216		95% BCA Bootstrap UCL	0.017		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.0199		
				97.5% Chebyshev(Mean, Sd) UCL	0.0241		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.0324		
	95% Approximate Gamma UCL	0.0132					
	95% Adjusted Gamma UCL	0.0136					
Potential UCL to Use				Use 95% Student's-t UCL	0.0141		
				or 95% Modified-t UCL	0.0144		

Result or 1/2 SDL (phenanthrene)

General Statistics							
	Number of Valid Samples	16		Number of Unique Samples	15		
Raw Statistics				Log-transformed Statistics			
	Minimum	0.0076		Minimum of Log Data	-4.88		
	Maximum	0.508		Maximum of Log Data	-0.677		
	Mean	0.0746		Mean of log Data	-3.548		

Median	0.021	SD of log Data	1.383
SD	0.126		
Coefficient of Variation	1.691		
Skewness	3.037		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.583	Shapiro Wilk Test Statistic	0.857
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.13	95% H-UCL	0.248
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.184
95% Adjusted-CLT UCL	0.152	97.5% Chebyshev (MVUE) UCL	0.235
95% Modified-t UCL	0.134	99% Chebyshev (MVUE) UCL	0.334
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.564	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.132		
nu star	18.03		
Approximate Chi Square Value (.05)	9.415	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.126
Adjusted Chi Square Value	8.713	95% Jackknife UCL	0.13
		95% Standard Bootstrap UCL	0.126
Anderson-Darling Test Statistic	1.118	95% Bootstrap-t UCL	0.204
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	0.315
Kolmogorov-Smirnov Test Statistic	0.267	95% Percentile Bootstrap UCL	0.133
Kolmogorov-Smirnov 5% Critical Value	0.225	95% BCA Bootstrap UCL	0.16
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.212
		97.5% Chebyshev(Mean, Sd) UCL	0.272
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.388
95% Approximate Gamma UCL	0.143		
95% Adjusted Gamma UCL	0.154		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.388

Result or 1/2 SDL (pyrene)

General Statistics

Number of Valid Samples		16	Number of Unique Samples		16
Raw Statistics			Log-transformed Statistics		
Minimum	0.0073		Minimum of Log Data	-4.92	
Maximum	0.862		Maximum of Log Data	-0.149	
Mean	0.13		Mean of log Data	-3.251	
Median	0.023		SD of log Data	1.632	
SD	0.22				
Coefficient of Variation	1.697				
Skewness	2.746				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.617	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.227	95% H-UCL	0.729
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.383
95% Adjusted-CLT UCL	0.261	97.5% Chebyshev (MVUE) UCL	0.495
95% Modified-t UCL	0.233	99% Chebyshev (MVUE) UCL	0.714
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.465	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.279		
nu star	14.89		
Approximate Chi Square Value (.05)	7.184	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	0.221
Adjusted Chi Square Value	6.582	95% Jackknife UCL	0.227
		95% Standard Bootstrap UCL	0.218
Anderson-Darling Test Statistic	1.081	95% Bootstrap-t UCL	0.336
Anderson-Darling 5% Critical Value	0.794	95% Hall's Bootstrap UCL	0.545
Kolmogorov-Smirnov Test Statistic	0.241	95% Percentile Bootstrap UCL	0.226
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	0.264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.37
		97.5% Chebyshev(Mean, Sd) UCL	0.474
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.678
95% Approximate Gamma UCL	0.269		
95% Adjusted Gamma UCL	0.294		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.678

Result or 1/2 SDL (silver)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	14
Raw Statistics		Log-transformed Statistics	
Minimum	0.0335	Minimum of Log Data	-3.396
Maximum	0.54	Maximum of Log Data	-0.616
Mean	0.172	Mean of log Data	-2.392
Median	0.0448	SD of log Data	1.164
SD	0.184		
Coefficient of Variation	1.07		
Skewness	0.821		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.731	Shapiro Wilk Test Statistic	0.729
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.252		95% H-UCL		0.44	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.409	
95% Adjusted-CLT UCL		0.257		97.5% Chebyshev (MVUE) UCL		0.512	
95% Modified-t UCL		0.254		99% Chebyshev (MVUE) UCL		0.716	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.792		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.217					
nu star		25.36					
Approximate Chi Square Value (.05)		14.88		Nonparametric Statistics			
Adjusted Level of Significance		0.0335		95% CLT UCL		0.247	
Adjusted Chi Square Value		13.98		95% Jackknife UCL		0.252	
				95% Standard Bootstrap UCL		0.247	
Anderson-Darling Test Statistic		2.15		95% Bootstrap-t UCL		0.273	
Anderson-Darling 5% Critical Value		0.767		95% Hall's Bootstrap UCL		0.245	
Kolmogorov-Smirnov Test Statistic		0.368		95% Percentile Bootstrap UCL		0.246	
Kolmogorov-Smirnov 5% Critical Value		0.222		95% BCA Bootstrap UCL		0.254	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.372	
				97.5% Chebyshev(Mean, Sd) UCL		0.459	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.629	
95% Approximate Gamma UCL		0.293					
95% Adjusted Gamma UCL		0.312					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.629	
Recommended UCL exceeds the maximum observation							
Result or 1/2 SDL (strontium)							
General Statistics							
Number of Valid Samples		16		Number of Unique Samples		15	
Raw Statistics				Log-transformed Statistics			
Minimum		32.8		Minimum of Log Data		3.49	
Maximum		81.7		Maximum of Log Data		4.403	
Mean		44.86		Mean of log Data		3.765	
Median		39.85		SD of log Data		0.274	
SD		14.43					
Coefficient of Variation		0.322					
Skewness		1.805					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.754		Shapiro Wilk Test Statistic		0.838	
Shapiro Wilk Critical Value		0.887		Shapiro Wilk Critical Value		0.887	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		51.19		95% H-UCL		51.06	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		58.14	

95% Adjusted-CLT UCL				52.54				97.5% Chebyshev (MVUE) UCL				63.96			
95% Modified-t UCL				51.46				99% Chebyshev (MVUE) UCL				75.39			
Gamma Distribution Test								Data Distribution							
k star (bias corrected)				10.61				Data do not follow a Discernable Distribution (0.05)							
Theta Star				4.23											
nu star				339.4											
Approximate Chi Square Value (.05)				297.7				Nonparametric Statistics							
Adjusted Level of Significance				0.0335				95% CLT UCL				50.8			
Adjusted Chi Square Value				293.2				95% Jackknife UCL				51.19			
								95% Standard Bootstrap UCL				50.44			
Anderson-Darling Test Statistic				1.15				95% Bootstrap-t UCL				57.32			
Anderson-Darling 5% Critical Value				0.738				95% Hall's Bootstrap UCL				81.83			
Kolmogorov-Smirnov Test Statistic				0.261				95% Percentile Bootstrap UCL				50.68			
Kolmogorov-Smirnov 5% Critical Value				0.215				95% BCA Bootstrap UCL				51.96			
Data not Gamma Distributed at 5% Significance Level								95% Chebyshev(Mean, Sd) UCL				60.59			
								97.5% Chebyshev(Mean, Sd) UCL				67.4			
Assuming Gamma Distribution								99% Chebyshev(Mean, Sd) UCL				80.77			
95% Approximate Gamma UCL				51.14											
95% Adjusted Gamma UCL				51.92											
Potential UCL to Use								Use 95% Student's-t UCL				51.19			
								or 95% Modified-t UCL				51.46			
Result or 1/2 SDL (titanium)															
General Statistics															
Number of Valid Samples				16				Number of Unique Samples				16			
Raw Statistics								Log-transformed Statistics							
Minimum				19.1				Minimum of Log Data				2.95			
Maximum				36.6				Maximum of Log Data				3.6			
Mean				25.58				Mean of log Data				3.225			
Median				23.95				SD of log Data				0.186			
SD				5.051											
Coefficient of Variation				0.198											
Skewness				1.084											
Relevant UCL Statistics															
Normal Distribution Test								Lognormal Distribution Test							
Shapiro Wilk Test Statistic				0.888				Shapiro Wilk Test Statistic				0.929			
Shapiro Wilk Critical Value				0.887				Shapiro Wilk Critical Value				0.887			
Data appear Normal at 5% Significance Level								Data appear Lognormal at 5% Significance Level							
Assuming Normal Distribution								Assuming Lognormal Distribution							
95% Student's-t UCL				27.79				95% H-UCL				27.88			
95% UCLs (Adjusted for Skewness)								95% Chebyshev (MVUE) UCL				30.76			
95% Adjusted-CLT UCL				28.02				97.5% Chebyshev (MVUE) UCL				33			
95% Modified-t UCL				27.85				99% Chebyshev (MVUE) UCL				37.42			
Gamma Distribution Test								Data Distribution							

k star (bias corrected)				24.34		Data appear Normal at 5% Significance Level										
Theta Star				1.051												
nu star				778.8												
Approximate Chi Square Value (.05)				715.1		Nonparametric Statistics										
Adjusted Level of Significance				0.0335		95% CLT UCL										27.65
Adjusted Chi Square Value				708.1		95% Jackknife UCL										27.79
						95% Standard Bootstrap UCL										27.65
Anderson-Darling Test Statistic				0.584		95% Bootstrap-t UCL										28.45
Anderson-Darling 5% Critical Value				0.736		95% Hall's Bootstrap UCL										28.66
Kolmogorov-Smirnov Test Statistic				0.202		95% Percentile Bootstrap UCL										27.66
Kolmogorov-Smirnov 5% Critical Value				0.215		95% BCA Bootstrap UCL										27.93
Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL										31.08
						97.5% Chebyshev(Mean, Sd) UCL										33.46
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL										38.14
95% Approximate Gamma UCL				27.86												
95% Adjusted Gamma UCL				28.13												
Potential UCL to Use						Use 95% Student's-t UCL										27.79
Result or 1/2 SDL (toluene)																
General Statistics																
Number of Valid Samples				16		Number of Unique Samples				16						
Raw Statistics						Log-transformed Statistics										
Minimum				4.4500E-4		Minimum of Log Data				-7.717						
Maximum				0.0058		Maximum of Log Data				-5.148						
Mean				0.0014		Mean of log Data				-6.833						
Median				8.6250E-4		SD of log Data				0.733						
SD				0.0013												
Coefficient of Variation				0.937												
Skewness				2.533												
Relevant UCL Statistics																
Normal Distribution Test						Lognormal Distribution Test										
Shapiro Wilk Test Statistic				0.679		Shapiro Wilk Test Statistic				0.896						
Shapiro Wilk Critical Value				0.887		Shapiro Wilk Critical Value				0.887						
Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level										
Assuming Normal Distribution						Assuming Lognormal Distribution										
95% Student's-t UCL				0.0020		95% H-UCL				0.0021						
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL				0.0025						
95% Adjusted-CLT UCL				0.0022		97.5% Chebyshev (MVUE) UCL				0.0030						
95% Modified-t UCL				0.0020		99% Chebyshev (MVUE) UCL				0.0040						
Gamma Distribution Test						Data Distribution										
k star (bias corrected)				1.593		Data Follow Appr. Gamma Distribution at 5% Significance Level										
Theta Star				8.9869E-4												
nu star				50.99												
Approximate Chi Square Value (.05)						Nonparametric Statistics										
Adjusted Level of Significance				0.0335		95% CLT UCL				0.0019						

Adjusted Chi Square Value	34.13	95% Jackknife UCL	0.0020
		95% Standard Bootstrap UCL	0.0019
Anderson-Darling Test Statistic	0.909	95% Bootstrap-t UCL	0.0025
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	0.0041
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	0.0019
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	0.0022
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0028
		97.5% Chebyshev(Mean, Sd) UCL	0.0035
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0047
95% Approximate Gamma UCL	0.0020		
95% Adjusted Gamma UCL	0.0021		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0020

Result or 1/2 SDL (vanadium)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	16
Raw Statistics		Log-transformed Statistics	
Minimum	9.06	Minimum of Log Data	2.204
Maximum	21.2	Maximum of Log Data	3.054
Mean	13.86	Mean of log Data	2.599
Median	13.45	SD of log Data	0.251
SD	3.523		
Coefficient of Variation	0.254		
Skewness	0.54		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	15.4	95% H-UCL	15.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.67
95% Adjusted-CLT UCL	15.44	97.5% Chebyshev (MVUE) UCL	19.32
95% Modified-t UCL	15.42	99% Chebyshev (MVUE) UCL	22.56
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	13.89	Data appear Normal at 5% Significance Level	
Theta Star	0.998		
nu star	444.4		
Approximate Chi Square Value (.05)	396.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	15.31
Adjusted Chi Square Value	391.4	95% Jackknife UCL	15.4
		95% Standard Bootstrap UCL	15.26
Anderson-Darling Test Statistic	0.338	95% Bootstrap-t UCL	15.59
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	15.42
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL	15.34

Kolmogorov-Smirnov 5% Critical Value	0.215	95% BCA Bootstrap UCL	15.42
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.7
		97.5% Chebyshev(Mean, Sd) UCL	19.36
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.62
95% Approximate Gamma UCL	15.53		
95% Adjusted Gamma UCL	15.74		
Potential UCL to Use		Use 95% Student's-t UCL	15.4

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	16	Number of Unique Samples	15
Raw Statistics		Log-transformed Statistics	
Minimum	18	Minimum of Log Data	2.89
Maximum	92.6	Maximum of Log Data	4.528
Mean	45.36	Mean of log Data	3.722
Median	43.6	SD of log Data	0.454
SD	19.88		
Coefficient of Variation	0.438		
Skewness	0.681		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	54.07	95% H-UCL	57.96
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	68.57
95% Adjusted-CLT UCL	54.44	97.5% Chebyshev (MVUE) UCL	78.56
95% Modified-t UCL	54.21	99% Chebyshev (MVUE) UCL	98.18
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.539	Data appear Normal at 5% Significance Level	
Theta Star	9.992		
nu star	145.3		
Approximate Chi Square Value (.05)	118.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	53.53
Adjusted Chi Square Value	115.7	95% Jackknife UCL	54.07
		95% Standard Bootstrap UCL	53.04
Anderson-Darling Test Statistic	0.399	95% Bootstrap-t UCL	55.53
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	55.68
Kolmogorov-Smirnov Test Statistic	0.163	95% Percentile Bootstrap UCL	53.4
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	54.04
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	67.02
		97.5% Chebyshev(Mean, Sd) UCL	76.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	94.81
95% Approximate Gamma UCL	55.64		

95% Adjusted Gamma UCL		56.97	
Potential UCL to Use			Use 95% Student's-t UCL
			54.07

APPENDIX A-7

BACKGROUND SEDIMENT INTRACOASTAL WATERWAY

								General UCL Statistics for Full Data Sets																							
User Selected Options																															
From File								J:\1352 - Gulfco RI\risk\data queries oct 07\EPC tables with onehalf DL\ISWE data - JUST BACKGROUN																							
Full Precision								OFF																							
Confidence Coefficient								95%																							
Number of Bootstrap Operations								2000																							
Result or 1/2 SDL (1,2,4-trimethylbenzene)																															
General Statistics																															
Number of Valid Samples										9				Number of Unique Samples										9							
Raw Statistics										Log-transformed Statistics																					
Minimum										1.6000E-4				Minimum of Log Data										-8.74							
Maximum										0.0039				Maximum of Log Data										-5.544							
Mean										9.1039E-4				Mean of log Data										-7.594							
Median										3.6200E-4				SD of log Data										1.097							
SD										0.0012																					
Coefficient of Variation										1.33																					
Skewness										2.32																					
Relevant UCL Statistics																															
Normal Distribution Test										Lognormal Distribution Test																					
Shapiro Wilk Test Statistic										0.677				Shapiro Wilk Test Statistic										0.913							
Shapiro Wilk Critical Value										0.829				Shapiro Wilk Critical Value										0.829							
Data not Normal at 5% Significance Level										Data appear Lognormal at 5% Significance Level																					
Assuming Normal Distribution										Assuming Lognormal Distribution																					
95% Student's-t UCL										0.0016				95% H-UCL										0.0036							
95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL										0.0022											
95% Adjusted-CLT UCL										0.0019				97.5% Chebyshev (MVUE) UCL										0.0028							
95% Modified-t UCL										0.0017				99% Chebyshev (MVUE) UCL										0.004							
Gamma Distribution Test										Data Distribution																					
k star (bias corrected)										0.725				Data appear Gamma Distributed at 5% Significance Level																	
Theta Star										0.0012																					
nu star										13.06																					
Approximate Chi Square Value (.05)										5.932				Nonparametric Statistics																	
Adjusted Level of Significance										0.0231				95% CLT UCL										0.0015							
Adjusted Chi Square Value										4.957				95% Jackknife UCL										0.0016							
														95% Standard Bootstrap UCL										0.0015							
Anderson-Darling Test Statistic										0.564				95% Bootstrap-t UCL										0.0033							
Anderson-Darling 5% Critical Value										0.744				95% Hall's Bootstrap UCL										0.0043							
Kolmogorov-Smirnov Test Statistic										0.223				95% Percentile Bootstrap UCL										0.0015							
Kolmogorov-Smirnov 5% Critical Value										0.287				95% BCA Bootstrap UCL										0.0018							
Data appear Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL										0.0026											
										97.5% Chebyshev(Mean, Sd) UCL										0.0034											
Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL										0.0049											
95% Approximate Gamma UCL										0.002																					
95% Adjusted Gamma UCL										0.0024																					

Potential UCL to Use		Use 95% Approximate Gamma UCL		0.002
Result or 1/2 SDL (1,4-dichlorobenzene)				
General Statistics				
Number of Valid Samples		9	Number of Unique Samples	
9				
Raw Statistics		Log-transformed Statistics		
Minimum	3.4050E-4	Minimum of Log Data	-7.985	
Maximum	0.0041	Maximum of Log Data	-5.494	
Mean	0.0014	Mean of log Data	-6.917	
Median	7.7000E-4	SD of log Data	0.947	
SD	0.0013			
Coefficient of Variation	0.936			
Skewness	1.198			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.817	Shapiro Wilk Test Statistic	0.905	
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829	
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	0.0023	95% H-UCL	0.0045	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		
95% Adjusted-CLT UCL	0.0024	97.5% Chebyshev (MVUE) UCL	0.0044	
95% Modified-t UCL	0.0023	99% Chebyshev (MVUE) UCL	0.0061	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	1.015	Data appear Gamma Distributed at 5% Significance Level		
Theta Star	0.0014			
nu star	18.26			
Approximate Chi Square Value (.05)	9.58	Nonparametric Statistics		
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0022	
Adjusted Chi Square Value	8.288	95% Jackknife UCL	0.0023	
		95% Standard Bootstrap UCL	0.0021	
Anderson-Darling Test Statistic	0.467	95% Bootstrap-t UCL	0.0031	
Anderson-Darling 5% Critical Value	0.736	95% Hall's Bootstrap UCL	0.0030	
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	0.0022	
Kolmogorov-Smirnov 5% Critical Value	0.285	95% BCA Bootstrap UCL	0.0023	
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0034	
		97.5% Chebyshev(Mean, Sd) UCL	0.0043	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0060	
95% Approximate Gamma UCL	0.0028			
95% Adjusted Gamma UCL	0.0032			
Potential UCL to Use		Use 95% Approximate Gamma UCL		0.0028
Result or 1/2 SDL (2-butanone)				

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	2.5250E-4	Minimum of Log Data	-8.284
Maximum	0.0024	Maximum of Log Data	-6.02
Mean	0.0011	Mean of log Data	-7.04
Median	0.0011	SD of log Data	0.879
SD	8.4810E-4		
Coefficient of Variation	0.718		
Skewness	0.348		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.89	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0017	95% H-UCL	0.0033
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0028
95% Adjusted-CLT UCL	0.0016	97.5% Chebyshev (MVUE) UCL	0.0035
95% Modified-t UCL	0.0017	99% Chebyshev (MVUE) UCL	0.0048
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.288	Data appear Normal at 5% Significance Level	
Theta Star	9.1690E-4		
nu star	23.19		
Approximate Chi Square Value (.05)	13.23	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0016
Adjusted Chi Square Value	11.68	95% Jackknife UCL	0.0017
		95% Standard Bootstrap UCL	0.0016
Anderson-Darling Test Statistic	0.402	95% Bootstrap-t UCL	0.0017
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	0.0015
Kolmogorov-Smirnov Test Statistic	0.179	95% Percentile Bootstrap UCL	0.0016
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	0.0016
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0024
		97.5% Chebyshev(Mean, Sd) UCL	0.0029
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0039
95% Approximate Gamma UCL	0.0020		
95% Adjusted Gamma UCL	0.0023		
Potential UCL to Use		Use 95% Student's-t UCL	0.0017

Result or 1/2 SDL (4,4'-ddt)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	9.1500E-5	Minimum of Log Data	-9.299

Maximum	5.7000E-4	Maximum of Log Data	-7.47
Mean	1.5550E-4	Mean of log Data	-8.988
Median	1.0450E-4	SD of log Data	0.576
SD	1.5569E-4		
Coefficient of Variation	1.001		
Skewness	2.981		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.443	Shapiro Wilk Test Statistic	0.531
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.5201E-4	95% H-UCL	2.4166E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.6745E-4
95% Adjusted-CLT UCL	2.9597E-4	97.5% Chebyshev (MVUE) UCL	3.2068E-4
95% Modified-t UCL	2.6060E-4	99% Chebyshev (MVUE) UCL	4.2525E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.697	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9.1636E-5		
nu star	30.54		
Approximate Chi Square Value (.05)	18.92	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	2.4086E-4
Adjusted Chi Square Value	17.02	95% Jackknife UCL	2.5201E-4
		95% Standard Bootstrap UCL	2.3684E-4
Anderson-Darling Test Statistic	2.237	95% Bootstrap-t UCL	0.0012
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	9.1506E-4
Kolmogorov-Smirnov Test Statistic	0.481	95% Percentile Bootstrap UCL	2.5644E-4
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	2.6300E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.8172E-4
		97.5% Chebyshev(Mean, Sd) UCL	4.7960E-4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.7188E-4
95% Approximate Gamma UCL	2.5102E-4		
95% Adjusted Gamma UCL	2.7908E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	3.8172E-4

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples		9	
		Number of Unique Samples	
		9	
Raw Statistics		Log-transformed Statistics	
Minimum	4730	Minimum of Log Data	8.462
Maximum	21800	Maximum of Log Data	9.99
Mean	12213	Mean of log Data	9.255
Median	10800	SD of log Data	0.604
SD	6892		
Coefficient of Variation	0.564		

Skewness		0.403		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk Test Statistic	0.903	
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829	
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	16486	95% H-UCL	21311	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23251	
95% Adjusted-CLT UCL	16322	97.5% Chebyshev (MVUE) UCL	28003	
95% Modified-t UCL	16537	99% Chebyshev (MVUE) UCL	37338	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	2.326	Data appear Normal at 5% Significance Level		
Theta Star	5252			
nu star	41.86			
Approximate Chi Square Value (.05)	28.03	Nonparametric Statistics		
Adjusted Level of Significance	0.0231	95% CLT UCL	15992	
Adjusted Chi Square Value	25.67	95% Jackknife UCL	16486	
		95% Standard Bootstrap UCL	15701	
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	16891	
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	15366	
Kolmogorov-Smirnov Test Statistic	0.176	95% Percentile Bootstrap UCL	15822	
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	16030	
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22228	
		97.5% Chebyshev(Mean, Sd) UCL	26561	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	35073	
95% Approximate Gamma UCL	18240			
95% Adjusted Gamma UCL	19920			
Potential UCL to Use		Use 95% Student's-t UCL	16486	

Result or 1/2 SDL (antimony)

General Statistics					
Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum		1.68	Minimum of Log Data		0.519
Maximum		7.33	Maximum of Log Data		1.992
Mean		4.023	Mean of log Data		1.251
Median		2.83	SD of log Data		0.568
SD		2.215			
Coefficient of Variation		0.55			
Skewness		0.488			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.866	Shapiro Wilk Test Statistic		0.897

Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.396	95% H-UCL	6.669
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.407
95% Adjusted-CLT UCL	5.366	97.5% Chebyshev (MVUE) UCL	8.87
95% Modified-t UCL	5.416	99% Chebyshev (MVUE) UCL	11.74
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.544	Data appear Normal at 5% Significance Level	
Theta Star	1.581		
nu star	45.79		
Approximate Chi Square Value (.05)	31.27	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	5.238
Adjusted Chi Square Value	28.76	95% Jackknife UCL	5.396
		95% Standard Bootstrap UCL	5.174
Anderson-Darling Test Statistic	0.505	95% Bootstrap-t UCL	5.62
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	5.015
Kolmogorov-Smirnov Test Statistic	0.233	95% Percentile Bootstrap UCL	5.182
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	5.207
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.241
		97.5% Chebyshev(Mean, Sd) UCL	8.634
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.37
95% Approximate Gamma UCL	5.892		
95% Adjusted Gamma UCL	6.407		
Potential UCL to Use		Use 95% Student's-t UCL	5.396

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	2.36	Minimum of Log Data	0.859
Maximum	9.62	Maximum of Log Data	2.264
Mean	5.813	Mean of log Data	1.623
Median	4.63	SD of log Data	0.566
SD	3.107		
Coefficient of Variation	0.534		
Skewness	0.351		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Test Statistic	0.878
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.739	95% H-UCL	9.637

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		10.71
95% Adjusted-CLT UCL	7.646	97.5% Chebyshev (MVUE) UCL		12.83
95% Modified-t UCL	7.759	99% Chebyshev (MVUE) UCL		16.97
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	2.603	Data appear Normal at 5% Significance Level		
Theta Star	2.233			
nu star	46.86			
Approximate Chi Square Value (.05)	32.15	Nonparametric Statistics		
Adjusted Level of Significance	0.0231	95% CLT UCL		7.517
Adjusted Chi Square Value	29.61	95% Jackknife UCL		7.739
		95% Standard Bootstrap UCL		7.435
Anderson-Darling Test Statistic	0.558	95% Bootstrap-t UCL		8.086
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL		7.147
Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL		7.476
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL		7.543
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		10.33
		97.5% Chebyshev(Mean, Sd) UCL		12.28
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		16.12
95% Approximate Gamma UCL	8.473			
95% Adjusted Gamma UCL	9.202			
Potential UCL to Use		Use 95% Student's-t UCL		7.739

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	111	Minimum of Log Data	4.71
Maximum	280	Maximum of Log Data	5.635
Mean	209.7	Mean of log Data	5.318
Median	201	SD of log Data	0.263
SD	47.73		
Coefficient of Variation	0.228		
Skewness	-0.775		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	239.2	95% H-UCL	253.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	291.1
95% Adjusted-CLT UCL	231.4	97.5% Chebyshev (MVUE) UCL	326
95% Modified-t UCL	238.6	99% Chebyshev (MVUE) UCL	394.7
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	12.22	Data appear Normal at 5% Significance Level	
Theta Star	17.15		
nu star	220		
Approximate Chi Square Value (.05)	186.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	235.8
Adjusted Chi Square Value	180.2	95% Jackknife UCL	239.2
		95% Standard Bootstrap UCL	233.9
Anderson-Darling Test Statistic	0.517	95% Bootstrap-t UCL	234.2
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	233.5
Kolmogorov-Smirnov Test Statistic	0.25	95% Percentile Bootstrap UCL	233
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	230.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	279
		97.5% Chebyshev(Mean, Sd) UCL	309
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	368
95% Approximate Gamma UCL	247.1		
95% Adjusted Gamma UCL	256		
Potential UCL to Use		Use 95% Student's-t UCL	239.2

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.0045	Minimum of Log Data	-5.394
Maximum	0.0369	Maximum of Log Data	-3.3
Mean	0.0087	Mean of log Data	-5.045
Median	0.0054	SD of log Data	0.66
SD	0.0106		
Coefficient of Variation	1.213		
Skewness	2.99		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.429	Shapiro Wilk Test Statistic	0.512
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0153	95% H-UCL	0.0146
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0154
95% Adjusted-CLT UCL	0.0183	97.5% Chebyshev (MVUE) UCL	0.0187
95% Modified-t UCL	0.0159	99% Chebyshev (MVUE) UCL	0.0252
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.273	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0068		
nu star	22.92		
Approximate Chi Square Value (.05)	13.03	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0145

Adjusted Chi Square Value	11.49	95% Jackknife UCL	0.0153
		95% Standard Bootstrap UCL	0.0141
Anderson-Darling Test Statistic	2.375	95% Bootstrap-t UCL	0.111
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0773
Kolmogorov-Smirnov Test Statistic	0.493	95% Percentile Bootstrap UCL	0.0157
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	0.016
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0241
		97.5% Chebyshev(Mean, Sd) UCL	0.0307
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0438
95% Approximate Gamma UCL	0.0153		
95% Adjusted Gamma UCL	0.0174		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0241

Result or 1/2 SDL (beryllium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.32	Minimum of Log Data	-1.139
Maximum	1.32	Maximum of Log Data	0.278
Mean	0.766	Mean of log Data	-0.403
Median	0.69	SD of log Data	0.566
SD	0.403		
Coefficient of Variation	0.527		
Skewness	0.315		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.016	95% H-UCL	1.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.412
95% Adjusted-CLT UCL	1.002	97.5% Chebyshev (MVUE) UCL	1.69
95% Modified-t UCL	1.018	99% Chebyshev (MVUE) UCL	2.237
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.633	Data appear Normal at 5% Significance Level	
Theta Star	0.291		
nu star	47.4		
Approximate Chi Square Value (.05)	32.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.987
Adjusted Chi Square Value	30.03	95% Jackknife UCL	1.016
		95% Standard Bootstrap UCL	0.976
Anderson-Darling Test Statistic	0.424	95% Bootstrap-t UCL	1.035
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	0.942
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	0.979

Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	0.992
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.351
		97.5% Chebyshev(Mean, Sd) UCL	1.605
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.103
95% Approximate Gamma UCL	1.113		
95% Adjusted Gamma UCL	1.208		
Potential UCL to Use		Use 95% Student's-t UCL	1.016

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	13.3	Minimum of Log Data	2.588
Maximum	47.9	Maximum of Log Data	3.869
Mean	27.64	Mean of log Data	3.222
Median	26	SD of log Data	0.472
SD	12.82		
Coefficient of Variation	0.464		
Skewness	0.532		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	35.59	95% H-UCL	40.83
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.85
95% Adjusted-CLT UCL	35.48	97.5% Chebyshev (MVUE) UCL	55.15
95% Modified-t UCL	35.71	99% Chebyshev (MVUE) UCL	71.47
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.598	Data appear Normal at 5% Significance Level	
Theta Star	7.684		
nu star	64.76		
Approximate Chi Square Value (.05)	47.24	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	34.67
Adjusted Chi Square Value	44.1	95% Jackknife UCL	35.59
		95% Standard Bootstrap UCL	34.22
Anderson-Darling Test Statistic	0.301	95% Bootstrap-t UCL	37.24
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	35.13
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	34.61
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	34.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.26
		97.5% Chebyshev(Mean, Sd) UCL	54.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	70.15
95% Approximate Gamma UCL	37.89		

95% Adjusted Gamma UCL		40.59			
Potential UCL to Use			Use 95% Student's-t UCL		35.59
Result or 1/2 SDL (carbon disulfide)					
General Statistics					
Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum	8.8000E-5		Minimum of Log Data	-9.338	
Maximum	0.0084		Maximum of Log Data	-4.778	
Mean	0.0015		Mean of log Data	-7.728	
Median	4.0500E-4		SD of log Data	1.636	
SD	0.0027				
Coefficient of Variation	1.789				
Skewness	2.348				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.612		Shapiro Wilk Test Statistic	0.888	
Shapiro Wilk Critical Value	0.829		Shapiro Wilk Critical Value	0.829	
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	0.0032		95% H-UCL	0.0283	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0044	
95% Adjusted-CLT UCL	0.0038		97.5% Chebyshev (MVUE) UCL	0.0058	
95% Modified-t UCL	0.0034		99% Chebyshev (MVUE) UCL	0.0084	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	0.41		Data appear Gamma Distributed at 5% Significance Level		
Theta Star	0.0037				
nu star	7.375				
Approximate Chi Square Value (.05)	2.378		Nonparametric Statistics		
Adjusted Level of Significance	0.0231		95% CLT UCL	0.0030	
Adjusted Chi Square Value	1.825		95% Jackknife UCL	0.0032	
			95% Standard Bootstrap UCL	0.0030	
Anderson-Darling Test Statistic	0.768		95% Bootstrap-t UCL	0.0153	
Anderson-Darling 5% Critical Value	0.77		95% Hall's Bootstrap UCL	0.0118	
Kolmogorov-Smirnov Test Statistic	0.256		95% Percentile Bootstrap UCL	0.0031	
Kolmogorov-Smirnov 5% Critical Value	0.294		95% BCA Bootstrap UCL	0.0039	
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0055	
			97.5% Chebyshev(Mean, Sd) UCL	0.0073	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0108	
95% Approximate Gamma UCL	0.0048				
95% Adjusted Gamma UCL	0.0062				
Potential UCL to Use			Use 95% Approximate Gamma UCL	0.0048	

Result or 1/2 SDL (chromium)									
General Statistics									
Number of Valid Samples		9		Number of Unique Samples		9			
Raw Statistics				Log-transformed Statistics					
Minimum		5.81		Minimum of Log Data		1.76			
Maximum		22.5		Maximum of Log Data		3.114			
Mean		12.81		Mean of log Data		2.43			
Median		11.1		SD of log Data		0.527			
SD		6.512							
Coefficient of Variation		0.508							
Skewness		0.444							
Relevant UCL Statistics									
Normal Distribution Test				Lognormal Distribution Test					
Shapiro Wilk Test Statistic		0.89		Shapiro Wilk Test Statistic		0.911			
Shapiro Wilk Critical Value		0.829		Shapiro Wilk Critical Value		0.829			
Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level					
Assuming Normal Distribution				Assuming Lognormal Distribution					
95% Student's-t UCL		16.85		95% H-UCL		20.21			
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		22.82			
95% Adjusted-CLT UCL		16.73		97.5% Chebyshev (MVUE) UCL		27.14			
95% Modified-t UCL		16.9		99% Chebyshev (MVUE) UCL		35.62			
Gamma Distribution Test				Data Distribution					
k star (bias corrected)		2.941		Data appear Normal at 5% Significance Level					
Theta Star		4.356							
nu star		52.95							
Approximate Chi Square Value (.05)		37.23		Nonparametric Statistics					
Adjusted Level of Significance		0.0231		95% CLT UCL		16.38			
Adjusted Chi Square Value		34.47		95% Jackknife UCL		16.85			
				95% Standard Bootstrap UCL		16.18			
Anderson-Darling Test Statistic		0.391		95% Bootstrap-t UCL		17.33			
Anderson-Darling 5% Critical Value		0.724		95% Hall's Bootstrap UCL		15.96			
Kolmogorov-Smirnov Test Statistic		0.167		95% Percentile Bootstrap UCL		16.21			
Kolmogorov-Smirnov 5% Critical Value		0.28		95% BCA Bootstrap UCL		16.55			
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		22.28			
				97.5% Chebyshev(Mean, Sd) UCL		26.37			
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		34.41			
95% Approximate Gamma UCL		18.22							
95% Adjusted Gamma UCL		19.68							
Potential UCL to Use				Use 95% Student's-t UCL		16.85			
Result or 1/2 SDL (cis-1,2-dichloroethene)									
General Statistics									
Number of Valid Samples		9		Number of Unique Samples		9			

Raw Statistics				Log-transformed Statistics			
	Minimum	1.0200E-4			Minimum of Log Data	-9.191	
	Maximum	0.0284			Maximum of Log Data	-3.561	
	Mean	0.0034			Mean of log Data	-7.775	
	Median	2.3050E-4			SD of log Data	1.763	
	SD	0.0093					
	Coefficient of Variation	2.706					
	Skewness	2.995					

Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.415			Shapiro Wilk Test Statistic	0.777	
	Shapiro Wilk Critical Value	0.829			Shapiro Wilk Critical Value	0.829	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0092			95% H-UCL	0.0514	
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL	0.0052	
	95% Adjusted-CLT UCL	0.0119			97.5% Chebyshev (MVUE) UCL	0.0068	
	95% Modified-t UCL	0.0097			99% Chebyshev (MVUE) UCL	0.01	
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	0.29		Data do not follow a Discernable Distribution (0.05)			
	Theta Star	0.0119					
	nu star	5.211					
	Approximate Chi Square Value (.05)	1.251		Nonparametric Statistics			
	Adjusted Level of Significance	0.0231			95% CLT UCL	0.0085	
	Adjusted Chi Square Value	0.892			95% Jackknife UCL	0.0092	
					95% Standard Bootstrap UCL	0.0083	
	Anderson-Darling Test Statistic	1.687			95% Bootstrap-t UCL	0.189	
	Anderson-Darling 5% Critical Value	0.803			95% Hall's Bootstrap UCL	0.106	
	Kolmogorov-Smirnov Test Statistic	0.384			95% Percentile Bootstrap UCL	0.0096	
	Kolmogorov-Smirnov 5% Critical Value	0.301			95% BCA Bootstrap UCL	0.0128	
Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL	0.0171	
					97.5% Chebyshev(Mean, Sd) UCL	0.0229	
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL	0.0345	
	95% Approximate Gamma UCL	0.0144					
	95% Adjusted Gamma UCL	0.0202					
Potential UCL to Use					Use 99% Chebyshev (Mean, Sd) UCL	0.0345	

Recommended UCL exceeds the maximum observation

Result or 1/2 SDL (cobalt)

General Statistics							
	Number of Valid Samples	9			Number of Unique Samples	9	
Raw Statistics				Log-transformed Statistics			
	Minimum	3.32			Minimum of Log Data	1.2	
	Maximum	11.8			Maximum of Log Data	2.468	
	Mean	6.698			Mean of log Data	1.8	

Median	5.92	SD of log Data	0.481
SD	3.165		
Coefficient of Variation	0.473		
Skewness	0.508		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.904	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.66	95% H-UCL	9.999
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11.45
95% Adjusted-CLT UCL	8.624	97.5% Chebyshev (MVUE) UCL	13.5
95% Modified-t UCL	8.69	99% Chebyshev (MVUE) UCL	17.53
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.458	Data appear Normal at 5% Significance Level	
Theta Star	1.937		
nu star	62.24		
Approximate Chi Square Value (.05)	45.09	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	8.433
Adjusted Chi Square Value	42.03	95% Jackknife UCL	8.66
		95% Standard Bootstrap UCL	8.395
Anderson-Darling Test Statistic	0.361	95% Bootstrap-t UCL	9.077
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	8.427
Kolmogorov-Smirnov Test Statistic	0.171	95% Percentile Bootstrap UCL	8.376
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	8.624
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.3
		97.5% Chebyshev(Mean, Sd) UCL	13.29
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.2
95% Approximate Gamma UCL	9.245		
95% Adjusted Gamma UCL	9.918		
Potential UCL to Use		Use 95% Student's-t UCL	8.66

Result or 1/2 SDL (copper)

General Statistics

Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum	2.68		Minimum of Log Data	0.986	
Maximum	16.8		Maximum of Log Data	2.821	
Mean	8.138		Mean of log Data	1.902	
Median	6.87		SD of log Data	0.676	
SD	5.165				
Coefficient of Variation	0.635				
Skewness	0.626				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.34	95% H-UCL	15.71
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.4
95% Adjusted-CLT UCL	11.35	97.5% Chebyshev (MVUE) UCL	19.95
95% Modified-t UCL	11.4	99% Chebyshev (MVUE) UCL	26.94
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.895	Data appear Normal at 5% Significance Level	
Theta Star	4.294		
nu star	34.11		
Approximate Chi Square Value (.05)	21.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	10.97
Adjusted Chi Square Value	19.7	95% Jackknife UCL	11.34
		95% Standard Bootstrap UCL	10.88
Anderson-Darling Test Statistic	0.31	95% Bootstrap-t UCL	12.32
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	11.26
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	10.93
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	11.27
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.64
		97.5% Chebyshev(Mean, Sd) UCL	18.89
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	25.27
95% Approximate Gamma UCL	12.76		
95% Adjusted Gamma UCL	14.09		
Potential UCL to Use		Use 95% Student's-t UCL	11.34

Result or 1/2 SDL (iron)

General Statistics			
Number of Valid Samples		9	
		Number of Unique Samples	
		9	
Raw Statistics		Log-transformed Statistics	
Minimum	7440	Minimum of Log Data	8.915
Maximum	27900	Maximum of Log Data	10.24
Mean	16496	Mean of log Data	9.596
Median	15000	SD of log Data	0.518
SD	8097		
Coefficient of Variation	0.491		
Skewness	0.325		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		21515		95% H-UCL		25764	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		29179	
95% Adjusted-CLT UCL		21247		97.5% Chebyshev (MVUE) UCL		34648	
95% Modified-t UCL		21563		99% Chebyshev (MVUE) UCL		45392	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		3.072		Data appear Normal at 5% Significance Level			
Theta Star		5370					
nu star		55.3					
Approximate Chi Square Value (.05)		39.21		Nonparametric Statistics			
Adjusted Level of Significance		0.0231		95% CLT UCL		20935	
Adjusted Chi Square Value		36.37		95% Jackknife UCL		21515	
				95% Standard Bootstrap UCL		20682	
Anderson-Darling Test Statistic		0.415		95% Bootstrap-t UCL		22181	
Anderson-Darling 5% Critical Value		0.724		95% Hall's Bootstrap UCL		20333	
Kolmogorov-Smirnov Test Statistic		0.177		95% Percentile Bootstrap UCL		20913	
Kolmogorov-Smirnov 5% Critical Value		0.28		95% BCA Bootstrap UCL		21189	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		28260	
				97.5% Chebyshev(Mean, Sd) UCL		33351	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		43351	
95% Approximate Gamma UCL		23264					
95% Adjusted Gamma UCL		25080					
Potential UCL to Use				Use 95% Student's-t UCL		21515	

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples		9	
Raw Statistics			
Minimum		5.34	
Maximum		14.5	
Mean		9.587	
Median		9.2	
SD		3.603	
Coefficient of Variation		0.376	
Skewness		0.161	

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.82	95% H-UCL	13.05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.14
95% Adjusted-CLT UCL	11.63	97.5% Chebyshev (MVUE) UCL	17.53

95% Modified-t UCL	11.83	99% Chebyshev (MVUE) UCL	22.23
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.179	Data appear Normal at 5% Significance Level	
Theta Star	1.851		
nu star	93.21		
Approximate Chi Square Value (.05)	71.95	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	11.56
Adjusted Chi Square Value	68.02	95% Jackknife UCL	11.82
		95% Standard Bootstrap UCL	11.48
Anderson-Darling Test Statistic	0.417	95% Bootstrap-t UCL	12.11
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	11.28
Kolmogorov-Smirnov Test Statistic	0.182	95% Percentile Bootstrap UCL	11.45
Kolmogorov-Smirnov 5% Critical Value	0.28	95% BCA Bootstrap UCL	11.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.82
		97.5% Chebyshev(Mean, Sd) UCL	17.09
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.54
95% Approximate Gamma UCL	12.42		
95% Adjusted Gamma UCL	13.14		
Potential UCL to Use		Use 95% Student's-t UCL	11.82

Result or 1/2 SDL (lithium)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	7.29	Minimum of Log Data	1.987
Maximum	44.6	Maximum of Log Data	3.798
Mean	21.4	Mean of log Data	2.852
Median	17.1	SD of log Data	0.697
SD	14.41		
Coefficient of Variation	0.673		
Skewness	0.724		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.868	Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	30.33	95% H-UCL	42.41
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	43.59
95% Adjusted-CLT UCL	30.54	97.5% Chebyshev (MVUE) UCL	53.19
95% Modified-t UCL	30.52	99% Chebyshev (MVUE) UCL	72.04
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.757	Data appear Normal at 5% Significance Level	
Theta Star	12.18		

Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	383.3
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	371.3
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	379.1
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	377.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	460
		97.5% Chebyshev(Mean, Sd) UCL	515.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	625.8
95% Approximate Gamma UCL	397.6		
95% Adjusted Gamma UCL	413.7		
Potential UCL to Use		Use 95% Student's-t UCL	385.8

Result or 1/2 SDL (mercury)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	0.05	Maximum of Log Data	-2.996
Mean	0.0176	Mean of log Data	-4.227
Median	0.016	SD of log Data	0.613
SD	0.0132		
Coefficient of Variation	0.753		
Skewness	2.163		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.752	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0258	95% H-UCL	0.0302
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0328
95% Adjusted-CLT UCL	0.0282	97.5% Chebyshev (MVUE) UCL	0.0396
95% Modified-t UCL	0.0263	99% Chebyshev (MVUE) UCL	0.0529
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.962	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0089		
nu star	35.32		
Approximate Chi Square Value (.05)	22.73	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0248
Adjusted Chi Square Value	20.62	95% Jackknife UCL	0.0258
		95% Standard Bootstrap UCL	0.0244
Anderson-Darling Test Statistic	0.431	95% Bootstrap-t UCL	0.0357
Anderson-Darling 5% Critical Value	0.727	95% Hall's Bootstrap UCL	0.0574
Kolmogorov-Smirnov Test Statistic	0.184	95% Percentile Bootstrap UCL	0.0249
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	0.0283
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0368

		97.5% Chebyshev(Mean, Sd) UCL	0.0452
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0615
95% Approximate Gamma UCL	0.0273		
95% Adjusted Gamma UCL	0.0301		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0273

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples		9	
		Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.16	Minimum of Log Data	-1.833
Maximum	0.35	Maximum of Log Data	-1.05
Mean	0.241	Mean of log Data	-1.458
Median	0.24	SD of log Data	0.282
SD	0.0675		
Coefficient of Variation	0.28		
Skewness	0.35		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.283	95% H-UCL	0.296
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.34
95% Adjusted-CLT UCL	0.281	97.5% Chebyshev (MVUE) UCL	0.383
95% Modified-t UCL	0.283	99% Chebyshev (MVUE) UCL	0.468
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.681	Data appear Normal at 5% Significance Level	
Theta Star	0.0249		
nu star	174.3		
Approximate Chi Square Value (.05)	144.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.278
Adjusted Chi Square Value	139	95% Jackknife UCL	0.283
		95% Standard Bootstrap UCL	0.276
Anderson-Darling Test Statistic	0.283	95% Bootstrap-t UCL	0.292
Anderson-Darling 5% Critical Value	0.721	95% Hall's Bootstrap UCL	0.278
Kolmogorov-Smirnov Test Statistic	0.167	95% Percentile Bootstrap UCL	0.276
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	0.274
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.339
		97.5% Chebyshev(Mean, Sd) UCL	0.382
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.465
95% Approximate Gamma UCL	0.29		
95% Adjusted Gamma UCL	0.302		

Potential UCL to Use				Use 95% Student's-t UCL				0.283
Result or 1/2 SDL (nickel)								
General Statistics								
Number of Valid Samples			9	Number of Unique Samples			9	
Raw Statistics				Log-transformed Statistics				
Minimum			6.31	Minimum of Log Data			1.842	
Maximum			27.3	Maximum of Log Data			3.307	
Mean			14.91	Mean of log Data			2.562	
Median			13	SD of log Data			0.571	
SD			8.111					
Coefficient of Variation			0.544					
Skewness			0.452					
Relevant UCL Statistics								
Normal Distribution Test				Lognormal Distribution Test				
Shapiro Wilk Test Statistic			0.892	Shapiro Wilk Test Statistic			0.909	
Shapiro Wilk Critical Value			0.829	Shapiro Wilk Critical Value			0.829	
Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level				
Assuming Normal Distribution				Assuming Lognormal Distribution				
95% Student's-t UCL			19.94	95% H-UCL			24.87	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			27.58	
95% Adjusted-CLT UCL			19.79	97.5% Chebyshev (MVUE) UCL			33.04	
95% Modified-t UCL			20.01	99% Chebyshev (MVUE) UCL			43.78	
Gamma Distribution Test				Data Distribution				
k star (bias corrected)			2.55	Data appear Normal at 5% Significance Level				
Theta Star			5.847					
nu star			45.91					
Approximate Chi Square Value (.05)			31.36	Nonparametric Statistics				
Adjusted Level of Significance			0.0231	95% CLT UCL			19.36	
Adjusted Chi Square Value			28.85	95% Jackknife UCL			19.94	
				95% Standard Bootstrap UCL			19.01	
Anderson-Darling Test Statistic			0.395	95% Bootstrap-t UCL			20.34	
Anderson-Darling 5% Critical Value			0.725	95% Hall's Bootstrap UCL			19.01	
Kolmogorov-Smirnov Test Statistic			0.172	95% Percentile Bootstrap UCL			19.16	
Kolmogorov-Smirnov 5% Critical Value			0.281	95% BCA Bootstrap UCL			19.24	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL			26.7	
				97.5% Chebyshev(Mean, Sd) UCL			31.8	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL			41.81	
95% Approximate Gamma UCL			21.83					
95% Adjusted Gamma UCL			23.73					
Potential UCL to Use				Use 95% Student's-t UCL			19.94	

Result or 1/2 SDL (strontium)

General Statistics					
Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum		34.8	Minimum of Log Data		3.55
Maximum		87.4	Maximum of Log Data		4.47
Mean		59.17	Mean of log Data		4.015
Median		59.3	SD of log Data		0.388
SD		22.06			
Coefficient of Variation		0.373			
Skewness		0.141			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.854	Shapiro Wilk Test Statistic		0.849
Shapiro Wilk Critical Value		0.829	Shapiro Wilk Critical Value		0.829
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		72.84	95% H-UCL		80.08
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		92.89
95% Adjusted-CLT UCL		71.63	97.5% Chebyshev (MVUE) UCL		107.5
95% Modified-t UCL		72.9	99% Chebyshev (MVUE) UCL		136.1
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		5.29	Data appear Normal at 5% Significance Level		
Theta Star		11.18			
nu star		95.22			
Approximate Chi Square Value (.05)		73.71	Nonparametric Statistics		
Adjusted Level of Significance		0.0231	95% CLT UCL		71.26
Adjusted Chi Square Value		69.73	95% Jackknife UCL		72.84
			95% Standard Bootstrap UCL		70.57
Anderson-Darling Test Statistic		0.641	95% Bootstrap-t UCL		73.19
Anderson-Darling 5% Critical Value		0.722	95% Hall's Bootstrap UCL		68.52
Kolmogorov-Smirnov Test Statistic		0.247	95% Percentile Bootstrap UCL		70.6
Kolmogorov-Smirnov 5% Critical Value		0.28	95% BCA Bootstrap UCL		71.02
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		91.22
			97.5% Chebyshev(Mean, Sd) UCL		105.1
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		132.3
95% Approximate Gamma UCL		76.43			
95% Adjusted Gamma UCL		80.79			
Potential UCL to Use			Use 95% Student's-t UCL		72.84

Result or 1/2 SDL (titanium)

General Statistics					
Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum		21.1	Minimum of Log Data		3.049

Maximum	54.5	Maximum of Log Data	3.998
Mean	31.79	Mean of log Data	3.417
Median	28.6	SD of log Data	0.297
SD	10.49		
Coefficient of Variation	0.33		
Skewness	1.471		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	38.29	95% H-UCL	39.38
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	45.43
95% Adjusted-CLT UCL	39.37	97.5% Chebyshev (MVUE) UCL	51.38
95% Modified-t UCL	38.58	99% Chebyshev (MVUE) UCL	63.05
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.159	Data appear Normal at 5% Significance Level	
Theta Star	3.896		
nu star	146.9		
Approximate Chi Square Value (.05)	119.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	37.54
Adjusted Chi Square Value	114.7	95% Jackknife UCL	38.29
		95% Standard Bootstrap UCL	37.2
Anderson-Darling Test Statistic	0.42	95% Bootstrap-t UCL	44.39
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	71.05
Kolmogorov-Smirnov Test Statistic	0.239	95% Percentile Bootstrap UCL	37.59
Kolmogorov-Smirnov 5% Critical Value	0.279	95% BCA Bootstrap UCL	39.23
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	47.03
		97.5% Chebyshev(Mean, Sd) UCL	53.62
		99% Chebyshev(Mean, Sd) UCL	66.58
Assuming Gamma Distribution			
95% Approximate Gamma UCL	38.95		
95% Adjusted Gamma UCL	40.7		
Potential UCL to Use		Use 95% Student's-t UCL	38.29

Result or 1/2 SDL (trichloroethene)

General Statistics

Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum	1.4300E-4		Minimum of Log Data	-8.853	
Maximum	0.0159		Maximum of Log Data	-4.141	
Mean	0.0021		Mean of log Data	-7.537	
Median	3.2350E-4		SD of log Data	1.495	
SD	0.0051				
Coefficient of Variation	2.351				

Skewness					2.966					
Relevant UCL Statistics										
Normal Distribution Test					Lognormal Distribution Test					
Shapiro Wilk Test Statistic				0.454	Shapiro Wilk Test Statistic				0.832	
Shapiro Wilk Critical Value				0.829	Shapiro Wilk Critical Value				0.829	
Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level					
Assuming Normal Distribution					Assuming Lognormal Distribution					
95% Student's-t UCL				0.0053	95% H-UCL				0.0178	
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL				0.0043	
95% Adjusted-CLT UCL				0.0068	97.5% Chebyshev (MVUE) UCL				0.0055	
95% Modified-t UCL				0.0056	99% Chebyshev (MVUE) UCL				0.0081	
Gamma Distribution Test					Data Distribution					
k star (bias corrected)				0.378	Data appear Lognormal at 5% Significance Level					
Theta Star				0.0058						
nu star				6.802						
Approximate Chi Square Value (.05)				2.063	Nonparametric Statistics					
Adjusted Level of Significance				0.0231	95% CLT UCL				0.0050	
Adjusted Chi Square Value				1.558	95% Jackknife UCL				0.0053	
					95% Standard Bootstrap UCL				0.0047	
Anderson-Darling Test Statistic				1.313	95% Bootstrap-t UCL				0.0421	
Anderson-Darling 5% Critical Value				0.779	95% Hall's Bootstrap UCL				0.0252	
Kolmogorov-Smirnov Test Statistic				0.319	95% Percentile Bootstrap UCL				0.0054	
Kolmogorov-Smirnov 5% Critical Value				0.296	95% BCA Bootstrap UCL				0.0072	
Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL				0.0096	
					97.5% Chebyshev(Mean, Sd) UCL				0.0129	
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL				0.0193	
95% Approximate Gamma UCL				0.0072						
95% Adjusted Gamma UCL				0.0095						
Potential UCL to Use					Use 95% Chebyshev (MVUE) UCL				0.0043	

Result or 1/2 SDL (vanadium)

General Statistics					
Number of Valid Samples		9	Number of Unique Samples		9
Raw Statistics			Log-transformed Statistics		
Minimum		10.2	Minimum of Log Data		2.322
Maximum		34.2	Maximum of Log Data		3.532
Mean		20.21	Mean of log Data		2.913
Median		19.1	SD of log Data		0.461
SD		9.135			
Coefficient of Variation		0.452			
Skewness		0.468			

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Test Statistic	0.919

Shapiro Wilk Critical Value		0.829	Shapiro Wilk Critical Value		0.829
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	25.87		95% H-UCL	29.5	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	33.92	
95% Adjusted-CLT UCL	25.73		97.5% Chebyshev (MVUE) UCL	39.86	
95% Modified-t UCL	25.95		99% Chebyshev (MVUE) UCL	51.51	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	3.758		Data appear Normal at 5% Significance Level		
Theta Star	5.378				
nu star	67.64				
Approximate Chi Square Value (.05)	49.71		Nonparametric Statistics		
Adjusted Level of Significance	0.0231		95% CLT UCL	25.22	
Adjusted Chi Square Value	46.49		95% Jackknife UCL	25.87	
			95% Standard Bootstrap UCL	25	
Anderson-Darling Test Statistic	0.366		95% Bootstrap-t UCL	26.93	
Anderson-Darling 5% Critical Value	0.723		95% Hall's Bootstrap UCL	25.05	
Kolmogorov-Smirnov Test Statistic	0.183		95% Percentile Bootstrap UCL	25.01	
Kolmogorov-Smirnov 5% Critical Value	0.28		95% BCA Bootstrap UCL	25.46	
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	33.48	
			97.5% Chebyshev(Mean, Sd) UCL	39.23	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	50.51	
95% Approximate Gamma UCL	27.5				
95% Adjusted Gamma UCL	29.41				
Potential UCL to Use			Use 95% Student's-t UCL	25.87	

Result or 1/2 SDL (xylene (total))

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	4.6250E-4	Minimum of Log Data	-7.679
Maximum	0.0044	Maximum of Log Data	-5.414
Mean	0.0017	Mean of log Data	-6.668
Median	0.0010	SD of log Data	0.863
SD	0.0014		
Coefficient of Variation	0.818		
Skewness	0.955		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0026	95% H-UCL	0.0046

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0040
95% Adjusted-CLT UCL	0.0027	97.5% Chebyshev (MVUE) UCL		0.005
95% Modified-t UCL	0.0026	99% Chebyshev (MVUE) UCL		0.0069
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	1.218	Data appear Normal at 5% Significance Level		
Theta Star	0.0014			
nu star	21.93			
Approximate Chi Square Value (.05)	12.29	Nonparametric Statistics		
Adjusted Level of Significance	0.0231	95% CLT UCL		0.0025
Adjusted Chi Square Value	10.79	95% Jackknife UCL		0.0026
		95% Standard Bootstrap UCL		0.0024
Anderson-Darling Test Statistic	0.43	95% Bootstrap-t UCL		0.0030
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL		0.0027
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL		0.0025
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL		0.0026
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0038
		97.5% Chebyshev(Mean, Sd) UCL		0.0047
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.0064
95% Approximate Gamma UCL	0.0031			
95% Adjusted Gamma UCL	0.0035			
Potential UCL to Use		Use 95% Student's-t UCL		0.0026

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples	9	Number of Unique Samples	9
Raw Statistics		Log-transformed Statistics	
Minimum	19.3	Minimum of Log Data	2.96
Maximum	54.1	Maximum of Log Data	3.991
Mean	36.04	Mean of log Data	3.515
Median	34.1	SD of log Data	0.404
SD	13.68		
Coefficient of Variation	0.379		
Skewness	0.0735		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.901	Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	44.52	95% H-UCL	49.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	57.54
95% Adjusted-CLT UCL	43.66	97.5% Chebyshev (MVUE) UCL	66.8
95% Modified-t UCL	44.54	99% Chebyshev (MVUE) UCL	84.99
Gamma Distribution Test		Data Distribution	

[illegible]

APPENDIX A-8

NORTH OF MARLIN SEDIMENT

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Result or 1/2 SDL (1,2-dichloroethane)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		40
Raw Statistics			Log-transformed Statistics		
Minimum		6.1500E-5	Minimum of Log Data		-9.696
Maximum		0.0024	Maximum of Log Data		-6.032
Mean		2.4915E-4	Mean of log Data		-9.1
Median		7.6250E-5	SD of log Data		0.927
SD		5.4106E-4			
Coefficient of Variation		2.172			
Skewness		3.34			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.373	Shapiro Wilk Test Statistic		0.564
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		3.8018E-4	95% H-UCL		2.3239E-4
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		2.8326E-4
95% Adjusted-CLT UCL		4.1783E-4	97.5% Chebyshev (MVUE) UCL		3.3255E-4
95% Modified-t UCL		3.8646E-4	99% Chebyshev (MVUE) UCL		4.2936E-4
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.713	Data do not follow a Discernable Distribution (0.05)		
Theta Star		3.4927E-4			
nu star		68.48			
Approximate Chi Square Value (.05)		50.43	Nonparametric Statistics		
Adjusted Level of Significance		0.045	95% CLT UCL		3.7760E-4
Adjusted Chi Square Value		49.95	95% Jackknife UCL		3.8018E-4
			95% Standard Bootstrap UCL		3.7454E-4
Anderson-Darling Test Statistic		11.29	95% Bootstrap-t UCL		4.7307E-4
Anderson-Darling 5% Critical Value		0.792	95% Hall's Bootstrap UCL		3.6616E-4
Kolmogorov-Smirnov Test Statistic		0.392	95% Percentile Bootstrap UCL		3.8040E-4
Kolmogorov-Smirnov 5% Critical Value		0.133	95% BCA Bootstrap UCL		4.2357E-4
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		5.8956E-4
			97.5% Chebyshev(Mean, Sd) UCL		7.3685E-4
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0010
95% Approximate Gamma UCL		3.3830E-4			
95% Adjusted Gamma UCL		3.4156E-4			

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL		5.8956E-4
Result or 1/2 SDL (2-methylnaphthalene)				
General Statistics				
Number of Valid Samples		48	Number of Unique Samples	
			33	
Raw Statistics		Log-transformed Statistics		
	Minimum	0.0042	Minimum of Log Data	-5.46
	Maximum	0.43	Maximum of Log Data	-0.844
	Mean	0.0246	Mean of log Data	-4.637
	Median	0.006	SD of log Data	1.069
	SD	0.0639		
	Coefficient of Variation	2.595		
	Skewness	5.712		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.343	Shapiro Wilk Test Statistic	0.691
	Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
	95% Student's-t UCL	0.0401	95% H-UCL	0.0249
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0304
	95% Adjusted-CLT UCL	0.0479	97.5% Chebyshev (MVUE) UCL	0.0362
	95% Modified-t UCL	0.0414	99% Chebyshev (MVUE) UCL	0.0477
Gamma Distribution Test		Data Distribution		
	k star (bias corrected)	0.627	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	0.0392		
	nu star	60.23		
Approximate Chi Square Value (.05)		43.38	Nonparametric Statistics	
	Adjusted Level of Significance	0.045	95% CLT UCL	0.0398
	Adjusted Chi Square Value	42.94	95% Jackknife UCL	0.0401
			95% Standard Bootstrap UCL	0.0398
	Anderson-Darling Test Statistic	8.232	95% Bootstrap-t UCL	0.0684
	Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	0.0914
	Kolmogorov-Smirnov Test Statistic	0.358	95% Percentile Bootstrap UCL	0.0421
	Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.0572
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0648
			97.5% Chebyshev(Mean, Sd) UCL	0.0822
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.116
	95% Approximate Gamma UCL	0.0342		
	95% Adjusted Gamma UCL	0.0345		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.116
Result or 1/2 SDL (4,4'-ddt)				

General Statistics					
Number of Valid Samples		56	Number of Unique Samples		52
Raw Statistics		Log-transformed Statistics			
Minimum	7.7000E-5	Minimum of Log Data	-9.472		
Maximum	0.0092	Maximum of Log Data	-4.686		
Mean	9.5155E-4	Mean of log Data	-7.784		
Median	3.5500E-4	SD of log Data	1.284		
SD	0.0015				
Coefficient of Variation	1.597				
Skewness	3.563				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.287	Lilliefors Test Statistic	0.142		
Lilliefors Critical Value	0.118	Lilliefors Critical Value	0.118		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
95% Student's-t UCL	0.0012	95% H-UCL	0.0014		
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0018		
95% Adjusted-CLT UCL	0.0013	97.5% Chebyshev (MVUE) UCL	0.0021		
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0029		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.7	Data do not follow a Discernable Distribution (0.05)			
Theta Star	0.0013				
nu star	78.45				
Approximate Chi Square Value (.05)	59.05	Nonparametric Statistics			
Adjusted Level of Significance	0.0457	95% CLT UCL	0.0012		
Adjusted Chi Square Value	58.6	95% Jackknife UCL	0.0012		
		95% Standard Bootstrap UCL	0.0012		
Anderson-Darling Test Statistic	2.244	95% Bootstrap-t UCL	0.0015		
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	0.0018		
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL	0.0013		
Kolmogorov-Smirnov 5% Critical Value	0.124	95% BCA Bootstrap UCL	0.0014		
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0018		
		97.5% Chebyshev(Mean, Sd) UCL	0.0022		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0029		
95% Approximate Gamma UCL	0.0012				
95% Adjusted Gamma UCL	0.0012				
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	0.0022		

Result or 1/2 SDL (acenaphthene)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		34
Raw Statistics			Log-transformed Statistics		
Minimum		0.0042	Minimum of Log Data		-5.46

Maximum	0.133	Maximum of Log Data	-2.017
Mean	0.0195	Mean of log Data	-4.671
Median	0.0055	SD of log Data	1.034
SD	0.031		
Coefficient of Variation	1.59		
Skewness	2.314		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.546	Shapiro Wilk Test Statistic	0.667
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.027	95% H-UCL	0.0228
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0278
95% Adjusted-CLT UCL	0.0285	97.5% Chebyshev (MVUE) UCL	0.0331
95% Modified-t UCL	0.0273	99% Chebyshev (MVUE) UCL	0.0434
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.771	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0253		
nu star	74.06		
Approximate Chi Square Value (.05)	55.24	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0269
Adjusted Chi Square Value	54.74	95% Jackknife UCL	0.027
		95% Standard Bootstrap UCL	0.0267
Anderson-Darling Test Statistic	8.594	95% Bootstrap-t UCL	0.0293
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	0.0276
Kolmogorov-Smirnov Test Statistic	0.357	95% Percentile Bootstrap UCL	0.0272
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0296
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.039
		97.5% Chebyshev(Mean, Sd) UCL	0.0475
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.064
95% Approximate Gamma UCL	0.0261		
95% Adjusted Gamma UCL	0.0264		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.064

Result or 1/2 SDL (acenaphthylene)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	36
Raw Statistics		Log-transformed Statistics	
Minimum	0.0037	Minimum of Log Data	-5.591
Maximum	0.545	Maximum of Log Data	-0.607
Mean	0.0314	Mean of log Data	-4.703
Median	0.0063	SD of log Data	1.137
SD	0.0928		
Coefficient of Variation	2.957		

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Result or 1/2 SDL (aluminum)

General Statistics			
Number of Valid Samples		48	Number of Unique Samples
			38
Raw Statistics		Log-transformed Statistics	
Minimum	3400	Minimum of Log Data	8.132
Maximum	19200	Maximum of Log Data	9.863
Mean	13229	Mean of log Data	9.454
Median	13650	SD of log Data	0.296
SD	3162		
Coefficient of Variation	0.239		
Skewness	-0.611		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		Shapiro Wilk Test Statistic	
0.972		0.854	

Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13995	95% H-UCL	14384
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15840
95% Adjusted-CLT UCL	13936	97.5% Chebyshev (MVUE) UCL	16931
95% Modified-t UCL	13988	99% Chebyshev (MVUE) UCL	19075
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	13.16	Data appear Normal at 5% Significance Level	
Theta Star	1005		
nu star	1264		
Approximate Chi Square Value (.05)	1182	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	13980
Adjusted Chi Square Value	1180	95% Jackknife UCL	13995
		95% Standard Bootstrap UCL	13978
Anderson-Darling Test Statistic	0.922	95% Bootstrap-t UCL	13984
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	13975
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	13979
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	13943
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15218
		97.5% Chebyshev(Mean, Sd) UCL	16079
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17770
95% Approximate Gamma UCL	14141		
95% Adjusted Gamma UCL	14170		
Potential UCL to Use		Use 95% Student's-t UCL	13995

Result or 1/2 SDL (anthracene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	0.0029	Minimum of Log Data	-5.821
Maximum	0.334	Maximum of Log Data	-1.097
Mean	0.0288	Mean of log Data	-4.661
Median	0.0060	SD of log Data	1.197
SD	0.0678		
Coefficient of Variation	2.358		
Skewness	3.546		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.418	Shapiro Wilk Test Statistic	0.774
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0452	95% H-UCL	0.0302

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0364
95% Adjusted-CLT UCL	0.0502	97.5% Chebyshev (MVUE) UCL		0.044
95% Modified-t UCL	0.046	99% Chebyshev (MVUE) UCL		0.0589
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.54	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0533			
nu star	51.83			
Approximate Chi Square Value (.05)	36.3	Nonparametric Statistics		
Adjusted Level of Significance	0.045	95% CLT UCL		0.0448
Adjusted Chi Square Value	35.89	95% Jackknife UCL		0.0452
		95% Standard Bootstrap UCL		0.0446
Anderson-Darling Test Statistic	7.224	95% Bootstrap-t UCL		0.0585
Anderson-Darling 5% Critical Value	0.809	95% Hall's Bootstrap UCL		0.0447
Kolmogorov-Smirnov Test Statistic	0.332	95% Percentile Bootstrap UCL		0.0466
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL		0.0521
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0714
		97.5% Chebyshev(Mean, Sd) UCL		0.0899
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.126
95% Approximate Gamma UCL	0.0411			
95% Adjusted Gamma UCL	0.0415			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.126

Result or 1/2 SDL (antimony)

General Statistics					
Number of Valid Samples		47	Number of Unique Samples		35
Raw Statistics			Log-transformed Statistics		
Minimum		0.12	Minimum of Log Data		-2.12
Maximum		4.24	Maximum of Log Data		1.445
Mean		1.154	Mean of log Data		-0.151
Median		1.14	SD of log Data		0.938
SD		0.724			
Coefficient of Variation		0.627			
Skewness		1.485			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.863	Shapiro Wilk Test Statistic		0.756
Shapiro Wilk Critical Value		0.946	Shapiro Wilk Critical Value		0.946
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		1.331	95% H-UCL		1.826
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		2.226
95% Adjusted-CLT UCL		1.352	97.5% Chebyshev (MVUE) UCL		2.619
95% Modified-t UCL		1.335	99% Chebyshev (MVUE) UCL		3.39
Gamma Distribution Test			Data Distribution		

k star (bias corrected)	1.745	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.661		
nu star	164.1		
Approximate Chi Square Value (.05)	135.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0449	95% CLT UCL	1.328
Adjusted Chi Square Value	134.6	95% Jackknife UCL	1.331
		95% Standard Bootstrap UCL	1.329
Anderson-Darling Test Statistic	3.362	95% Bootstrap-t UCL	1.348
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	1.387
Kolmogorov-Smirnov Test Statistic	0.237	95% Percentile Bootstrap UCL	1.331
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	1.357
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.614
		97.5% Chebyshev(Mean, Sd) UCL	1.814
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.205
95% Approximate Gamma UCL	1.398		
95% Adjusted Gamma UCL	1.406		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.614

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	47
Raw Statistics		Log-transformed Statistics	
Minimum	0.06	Minimum of Log Data	-2.813
Maximum	12.8	Maximum of Log Data	2.549
Mean	2.534	Mean of log Data	0.199
Median	2.19	SD of log Data	1.521
SD	2.465		
Coefficient of Variation	0.973		
Skewness	1.753		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.851	Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.131	95% H-UCL	7.442
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.391
95% Adjusted-CLT UCL	3.215	97.5% Chebyshev (MVUE) UCL	10.42
95% Modified-t UCL	3.146	99% Chebyshev (MVUE) UCL	14.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.774	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	3.273		
nu star	74.32		
Approximate Chi Square Value (.05)	55.47	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	3.119

Adjusted Chi Square Value	54.96	95% Jackknife UCL	3.131
		95% Standard Bootstrap UCL	3.105
Anderson-Darling Test Statistic	1.067	95% Bootstrap-t UCL	3.239
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	3.333
Kolmogorov-Smirnov Test Statistic	0.13	95% Percentile Bootstrap UCL	3.167
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	3.266
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.085
		97.5% Chebyshev(Mean, Sd) UCL	4.756
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.074
95% Approximate Gamma UCL	3.395		
95% Adjusted Gamma UCL	3.427		
Potential UCL to Use		Use 95% Approximate Gamma UCL	3.395

Result or 1/2 SDL (barium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	46
Raw Statistics		Log-transformed Statistics	
Minimum	36	Minimum of Log Data	3.584
Maximum	820	Maximum of Log Data	6.709
Mean	151.7	Mean of log Data	4.792
Median	102.5	SD of log Data	0.623
SD	136.5		
Coefficient of Variation	0.899		
Skewness	3.09		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.653	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	184.8	95% H-UCL	175.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	207
95% Adjusted-CLT UCL	193.5	97.5% Chebyshev (MVUE) UCL	233.6
95% Modified-t UCL	186.2	99% Chebyshev (MVUE) UCL	285.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.194	Data do not follow a Discernable Distribution (0.05)	
Theta Star	69.14		
nu star	210.7		
Approximate Chi Square Value (.05)	178.1	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	184.1
Adjusted Chi Square Value	177.1	95% Jackknife UCL	184.8
		95% Standard Bootstrap UCL	184
Anderson-Darling Test Statistic	2.597	95% Bootstrap-t UCL	203.2
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	214
Kolmogorov-Smirnov Test Statistic	0.219	95% Percentile Bootstrap UCL	186.1

Kolmogorov-Smirnov 5% Critical Value		0.129	95% BCA Bootstrap UCL		192.9
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		237.6
			97.5% Chebyshev(Mean, Sd) UCL		274.7
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		347.7
95% Approximate Gamma UCL		179.5			
95% Adjusted Gamma UCL		180.4			
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		237.6
Result or 1/2 SDL (benzo(a)anthracene)					
General Statistics					
Number of Valid Samples		48	Number of Unique Samples		36
Raw Statistics			Log-transformed Statistics		
Minimum		0.0025	Minimum of Log Data		-5.98
Maximum		0.993	Maximum of Log Data		-0.00702
Mean		0.0543	Mean of log Data		-4.585
Median		0.0056	SD of log Data		1.428
SD		0.175			
Coefficient of Variation		3.226			
Skewness		4.654			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.325	Shapiro Wilk Test Statistic		0.751
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0967	95% H-UCL		0.0509
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.0589
95% Adjusted-CLT UCL		0.114	97.5% Chebyshev (MVUE) UCL		0.0726
95% Modified-t UCL		0.0995	99% Chebyshev (MVUE) UCL		0.0996
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.384	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.141			
nu star		36.84			
Approximate Chi Square Value (.05)		23.95	Nonparametric Statistics		
Adjusted Level of Significance		0.045	95% CLT UCL		0.0959
Adjusted Chi Square Value		23.62	95% Jackknife UCL		0.0967
			95% Standard Bootstrap UCL		0.095
Anderson-Darling Test Statistic		8.124	95% Bootstrap-t UCL		0.27
Anderson-Darling 5% Critical Value		0.839	95% Hall's Bootstrap UCL		0.288
Kolmogorov-Smirnov Test Statistic		0.375	95% Percentile Bootstrap UCL		0.1
Kolmogorov-Smirnov 5% Critical Value		0.137	95% BCA Bootstrap UCL		0.116
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.164
			97.5% Chebyshev(Mean, Sd) UCL		0.212
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.306
95% Approximate Gamma UCL		0.0835			

95% Adjusted Gamma UCL		0.0847			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.306
Result or 1/2 SDL (benzo(a)pyrene)					
General Statistics					
Number of Valid Samples		48	Number of Unique Samples		32
Raw Statistics			Log-transformed Statistics		
	Minimum	0.0043		Minimum of Log Data	-5.447
	Maximum	1.3		Maximum of Log Data	0.262
	Mean	0.104		Mean of log Data	-4.13
	Median	0.0058		SD of log Data	1.695
	SD	0.259			
	Coefficient of Variation	2.493			
	Skewness	3.36			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.455		Shapiro Wilk Test Statistic	0.725
	Shapiro Wilk Critical Value	0.947		Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.167		95% H-UCL	0.148
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.156
	95% Adjusted-CLT UCL	0.185		97.5% Chebyshev (MVUE) UCL	0.196
	95% Modified-t UCL	0.17		99% Chebyshev (MVUE) UCL	0.275
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.35	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.297			
	nu star	33.64			
	Approximate Chi Square Value (.05)	21.37	Nonparametric Statistics		
	Adjusted Level of Significance	0.045		95% CLT UCL	0.165
	Adjusted Chi Square Value	21.07		95% Jackknife UCL	0.167
				95% Standard Bootstrap UCL	0.165
	Anderson-Darling Test Statistic	7.481		95% Bootstrap-t UCL	0.225
	Anderson-Darling 5% Critical Value	0.848		95% Hall's Bootstrap UCL	0.193
	Kolmogorov-Smirnov Test Statistic	0.326		95% Percentile Bootstrap UCL	0.168
	Kolmogorov-Smirnov 5% Critical Value	0.138		95% BCA Bootstrap UCL	0.197
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.267
				97.5% Chebyshev(Mean, Sd) UCL	0.338
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.476
	95% Approximate Gamma UCL	0.164			
	95% Adjusted Gamma UCL	0.166			
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	0.476

Result or 1/2 SDL (benzo(b)fluoranthene)									
General Statistics									
Number of Valid Samples			48	Number of Unique Samples			43		
Raw Statistics				Log-transformed Statistics					
Minimum			0.0037	Minimum of Log Data			-5.581		
Maximum			1.36	Maximum of Log Data			0.307		
Mean			0.0902	Mean of log Data			-4.019		
Median			0.0119	SD of log Data			1.65		
SD			0.237						
Coefficient of Variation			2.63						
Skewness			4.175						
Relevant UCL Statistics									
Normal Distribution Test				Lognormal Distribution Test					
Shapiro Wilk Test Statistic			0.413	Shapiro Wilk Test Statistic			0.842		
Shapiro Wilk Critical Value			0.947	Shapiro Wilk Critical Value			0.947		
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level					
Assuming Normal Distribution				Assuming Lognormal Distribution					
95% Student's-t UCL			0.148	95% H-UCL			0.148		
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			0.159		
95% Adjusted-CLT UCL			0.169	97.5% Chebyshev (MVUE) UCL			0.2		
95% Modified-t UCL			0.151	99% Chebyshev (MVUE) UCL			0.279		
Gamma Distribution Test				Data Distribution					
k star (bias corrected)			0.395	Data do not follow a Discernable Distribution (0.05)					
Theta Star			0.228						
nu star			37.94						
Approximate Chi Square Value (.05)			24.84	Nonparametric Statistics					
Adjusted Level of Significance			0.045	95% CLT UCL			0.146		
Adjusted Chi Square Value			24.51	95% Jackknife UCL			0.148		
				95% Standard Bootstrap UCL			0.146		
Anderson-Darling Test Statistic			4.515	95% Bootstrap-t UCL			0.261		
Anderson-Darling 5% Critical Value			0.836	95% Hall's Bootstrap UCL			0.168		
Kolmogorov-Smirnov Test Statistic			0.218	95% Percentile Bootstrap UCL			0.151		
Kolmogorov-Smirnov 5% Critical Value			0.137	95% BCA Bootstrap UCL			0.175		
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL			0.239		
				97.5% Chebyshev(Mean, Sd) UCL			0.304		
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL			0.431		
95% Approximate Gamma UCL			0.138						
95% Adjusted Gamma UCL			0.14						
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL			0.431		
Result or 1/2 SDL (benzo(g,h,i)perylene)									
General Statistics									
Number of Valid Samples			48	Number of Unique Samples			38		

Raw Statistics			Log-transformed Statistics		
	Minimum	0.0043		Minimum of Log Data	-5.446
	Maximum	1.94		Maximum of Log Data	0.663
	Mean	0.198		Mean of log Data	-3.047
	Median	0.0648		SD of log Data	1.783
	SD	0.388			
	Coefficient of Variation	1.959			
	Skewness	3.146			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.548		Shapiro Wilk Test Statistic	0.917
	Shapiro Wilk Critical Value	0.947		Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	0.292		95% H-UCL	0.546
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	0.553
	95% Adjusted-CLT UCL	0.317		97.5% Chebyshev (MVUE) UCL	0.699
	95% Modified-t UCL	0.296		99% Chebyshev (MVUE) UCL	0.986
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	0.438	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	0.453			
	nu star	42.01			
	Approximate Chi Square Value (.05)	28.16	Nonparametric Statistics		
	Adjusted Level of Significance	0.045		95% CLT UCL	0.29
	Adjusted Chi Square Value	27.8		95% Jackknife UCL	0.292
				95% Standard Bootstrap UCL	0.29
	Anderson-Darling Test Statistic	1.962		95% Bootstrap-t UCL	0.352
	Anderson-Darling 5% Critical Value	0.826		95% Hall's Bootstrap UCL	0.364
	Kolmogorov-Smirnov Test Statistic	0.159		95% Percentile Bootstrap UCL	0.296
	Kolmogorov-Smirnov 5% Critical Value	0.136		95% BCA Bootstrap UCL	0.325
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	0.442
				97.5% Chebyshev(Mean, Sd) UCL	0.548
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	0.755
	95% Approximate Gamma UCL	0.296			
	95% Adjusted Gamma UCL	0.299			
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL	0.755

Result or 1/2 SDL (benzo(k)fluoranthene)

General Statistics					
	Number of Valid Samples	48		Number of Unique Samples	30
Raw Statistics			Log-transformed Statistics		
	Minimum	0.005		Minimum of Log Data	-5.298
	Maximum	0.73		Maximum of Log Data	-0.315
	Mean	0.0659		Mean of log Data	-3.783
	Median	0.009		SD of log Data	1.455

SD	0.119		
Coefficient of Variation	1.813		
Skewness	4.12		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.807
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0948	95% H-UCL	0.12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.138
95% Adjusted-CLT UCL	0.105	97.5% Chebyshev (MVUE) UCL	0.171
95% Modified-t UCL	0.0965	99% Chebyshev (MVUE) UCL	0.235
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.561	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.117		
nu star	53.85		
Approximate Chi Square Value (.05)	37.99	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0942
Adjusted Chi Square Value	37.57	95% Jackknife UCL	0.0948
		95% Standard Bootstrap UCL	0.0947
Anderson-Darling Test Statistic	4.058	95% Bootstrap-t UCL	0.121
Anderson-Darling 5% Critical Value	0.807	95% Hall's Bootstrap UCL	0.229
Kolmogorov-Smirnov Test Statistic	0.333	95% Percentile Bootstrap UCL	0.0971
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.112
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.141
		97.5% Chebyshev(Mean, Sd) UCL	0.174
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.237
95% Approximate Gamma UCL	0.0934		
95% Adjusted Gamma UCL	0.0944		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.237

Result or 1/2 SDL (beryllium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	36
Raw Statistics		Log-transformed Statistics	
Minimum	0.28	Minimum of Log Data	-1.273
Maximum	1.37	Maximum of Log Data	0.315
Mean	0.894	Mean of log Data	-0.144
Median	0.93	SD of log Data	0.269
SD	0.206		
Coefficient of Variation	0.23		
Skewness	-0.364		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.983		Shapiro Wilk Test Statistic		0.896	
Shapiro Wilk Critical Value		0.947		Shapiro Wilk Critical Value		0.947	
Data appear Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.943		95% H-UCL		0.962	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		1.051	
95% Adjusted-CLT UCL		0.941		97.5% Chebyshev (MVUE) UCL		1.118	
95% Modified-t UCL		0.943		99% Chebyshev (MVUE) UCL		1.249	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		15.18		Data appear Normal at 5% Significance Level			
Theta Star		0.0589					
nu star		1457					
Approximate Chi Square Value (.05)		1369		Nonparametric Statistics			
Adjusted Level of Significance		0.045		95% CLT UCL		0.942	
Adjusted Chi Square Value		1367		95% Jackknife UCL		0.943	
				95% Standard Bootstrap UCL		0.942	
Anderson-Darling Test Statistic		0.763		95% Bootstrap-t UCL		0.939	
Anderson-Darling 5% Critical Value		0.749		95% Hall's Bootstrap UCL		0.939	
Kolmogorov-Smirnov Test Statistic		0.149		95% Percentile Bootstrap UCL		0.942	
Kolmogorov-Smirnov 5% Critical Value		0.128		95% BCA Bootstrap UCL		0.938	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		1.023	
				97.5% Chebyshev(Mean, Sd) UCL		1.079	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		1.189	
95% Approximate Gamma UCL		0.951					
95% Adjusted Gamma UCL		0.953					
Potential UCL to Use				Use 95% Student's-t UCL		0.943	

Result or 1/2 SDL (boron)

General Statistics			
Number of Valid Samples		48	
Number of Unique Samples			46
Raw Statistics		Log-transformed Statistics	
Minimum	0.58	Minimum of Log Data	-0.545
Maximum	46.2	Maximum of Log Data	3.833
Mean	14.49	Mean of log Data	2.02
Median	11.4	SD of log Data	1.466
SD	12.22		
Coefficient of Variation	0.844		
Skewness	0.839		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		0.901	
Shapiro Wilk Critical Value		0.947	
Data not Normal at 5% Significance Level			
Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17.45	95% H-UCL	40.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.66
95% Adjusted-CLT UCL	17.62	97.5% Chebyshev (MVUE) UCL	57.72
95% Modified-t UCL	17.48	99% Chebyshev (MVUE) UCL	79.44
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.853	Data do not follow a Discernable Distribution (0.05)	
Theta Star	16.98		
nu star	81.9		
Approximate Chi Square Value (.05)	62.05	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	17.39
Adjusted Chi Square Value	61.51	95% Jackknife UCL	17.45
		95% Standard Bootstrap UCL	17.3
Anderson-Darling Test Statistic	1.863	95% Bootstrap-t UCL	17.73
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	17.66
Kolmogorov-Smirnov Test Statistic	0.164	95% Percentile Bootstrap UCL	17.35
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	17.58
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.18
		97.5% Chebyshev(Mean, Sd) UCL	25.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.04
95% Approximate Gamma UCL	19.12		
95% Adjusted Gamma UCL	19.29		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	32.04

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		35
Raw Statistics			Log-transformed Statistics		
Minimum		0.0029	Minimum of Log Data		-5.843
Maximum		0.48	Maximum of Log Data		-0.734
Mean		0.103	Mean of log Data		-3.439
Median		0.0158	SD of log Data		1.593
SD		0.146			
Coefficient of Variation		1.423			
Skewness		1.467			

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.691	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.138	95% H-UCL	0.231
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.254
95% Adjusted-CLT UCL	0.142	97.5% Chebyshev (MVUE) UCL	0.317
95% Modified-t UCL	0.139	99% Chebyshev (MVUE) UCL	0.442

Gamma Distribution Test				Data Distribution			
k star (bias corrected)	0.52	Data do not follow a Discernable Distribution (0.05)					
Theta Star	0.198						
nu star	49.9						
Approximate Chi Square Value (.05)	34.68	Nonparametric Statistics					
Adjusted Level of Significance	0.045	95% CLT UCL				0.137	
Adjusted Chi Square Value	34.29	95% Jackknife UCL				0.138	
		95% Standard Bootstrap UCL				0.139	
Anderson-Darling Test Statistic	3.459	95% Bootstrap-t UCL				0.148	
Anderson-Darling 5% Critical Value	0.81	95% Hall's Bootstrap UCL				0.144	
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL				0.137	
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL				0.142	
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL				0.195	
		97.5% Chebyshev(Mean, Sd) UCL				0.235	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL				0.313	
95% Approximate Gamma UCL	0.148						
95% Adjusted Gamma UCL	0.15						
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL				0.313	

Result or 1/2 SDL (carbazole)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		35
Raw Statistics			Log-transformed Statistics		
Minimum	0.0040		Minimum of Log Data	-5.507	
Maximum	0.141		Maximum of Log Data	-1.959	
Mean	0.0192		Mean of log Data	-4.698	
Median	0.0055		SD of log Data	1.042	
SD	0.0315				
Coefficient of Variation	1.637				
Skewness	2.515				

Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.54		Shapiro Wilk Test Statistic	0.683
Shapiro Wilk Critical Value	0.947		Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0269		95% H-UCL	0.0225
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0274
95% Adjusted-CLT UCL	0.0285		97.5% Chebyshev (MVUE) UCL	0.0326
95% Modified-t UCL	0.0271		99% Chebyshev (MVUE) UCL	0.0428
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.759		Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0253			
nu star	72.88			

Approximate Chi Square Value (.05)	54.22	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0267
Adjusted Chi Square Value	53.72	95% Jackknife UCL	0.0269
		95% Standard Bootstrap UCL	0.0266
Anderson-Darling Test Statistic	8.173	95% Bootstrap-t UCL	0.0305
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	0.0283
Kolmogorov-Smirnov Test Statistic	0.369	95% Percentile Bootstrap UCL	0.0274
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0287
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0391
		97.5% Chebyshev(Mean, Sd) UCL	0.0476
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0645
95% Approximate Gamma UCL	0.0259		
95% Adjusted Gamma UCL	0.0261		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0645

Result or 1/2 SDL (carbon disulfide)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38
Raw Statistics		Log-transformed Statistics	
Minimum	5.9000E-5	Minimum of Log Data	-9.738
Maximum	0.0069	Maximum of Log Data	-4.963
Mean	5.2498E-4	Mean of log Data	-9.042
Median	7.1500E-5	SD of log Data	1.244
SD	0.0014		
Coefficient of Variation	2.753		
Skewness	3.417		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.369	Shapiro Wilk Test Statistic	0.526
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.7506E-4	95% H-UCL	4.1104E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.9331E-4
95% Adjusted-CLT UCL	9.7810E-4	97.5% Chebyshev (MVUE) UCL	5.9875E-4
95% Modified-t UCL	8.9220E-4	99% Chebyshev (MVUE) UCL	8.0588E-4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.422	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0012		
nu star	40.53		
Approximate Chi Square Value (.05)	26.94	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	8.6816E-4
Adjusted Chi Square Value	26.6	95% Jackknife UCL	8.7506E-4
		95% Standard Bootstrap UCL	8.6161E-4
Anderson-Darling Test Statistic	12.67	95% Bootstrap-t UCL	0.0011

Anderson-Darling 5% Critical Value	0.829	95% Hall's Bootstrap UCL	8.5064E-4
Kolmogorov-Smirnov Test Statistic	0.433	95% Percentile Bootstrap UCL	9.0636E-4
Kolmogorov-Smirnov 5% Critical Value	0.136	95% BCA Bootstrap UCL	9.8527E-4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0014
		97.5% Chebyshev(Mean, Sd) UCL	0.0018
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0026
95% Approximate Gamma UCL	7.8974E-4		
95% Adjusted Gamma UCL	7.9995E-4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0026

Result or 1/2 SDL (chromium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	42
Raw Statistics		Log-transformed Statistics	
Minimum	8.96	Minimum of Log Data	2.193
Maximum	44.6	Maximum of Log Data	3.798
Mean	15.07	Mean of log Data	2.667
Median	14.1	SD of log Data	0.286
SD	5.536		
Coefficient of Variation	0.367		
Skewness	3.399		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.716	Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.41	95% H-UCL	16.14
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.73
95% Adjusted-CLT UCL	16.81	97.5% Chebyshev (MVUE) UCL	18.91
95% Modified-t UCL	16.48	99% Chebyshev (MVUE) UCL	21.24
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	10.44	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.443		
nu star	1003		
Approximate Chi Square Value (.05)	930.2	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	16.39
Adjusted Chi Square Value	928	95% Jackknife UCL	16.41
		95% Standard Bootstrap UCL	16.4
Anderson-Darling Test Statistic	1.41	95% Bootstrap-t UCL	17.14
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	22.68
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	16.47
Kolmogorov-Smirnov 5% Critical Value	0.128	95% BCA Bootstrap UCL	16.94
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.56
		97.5% Chebyshev(Mean, Sd) UCL	20.06

Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23.02
95% Approximate Gamma UCL	16.25		
95% Adjusted Gamma UCL	16.29		
Potential UCL to Use		Use 95% Student's-t UCL	16.41
		or 95% Modified-t UCL	16.48

Result or 1/2 SDL (chromium vi)

General Statistics			
Number of Valid Samples		25	
		Number of Unique Samples	25
Raw Statistics		Log-transformed Statistics	
Minimum	0.181	Minimum of Log Data	-1.712
Maximum	4.04	Maximum of Log Data	1.396
Mean	0.956	Mean of log Data	-0.684
Median	0.284	SD of log Data	1.105
SD	1.207		
Coefficient of Variation	1.263		
Skewness	1.817		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.672	Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.369	95% H-UCL	1.686
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.894
95% Adjusted-CLT UCL	1.447	97.5% Chebyshev (MVUE) UCL	2.326
95% Modified-t UCL	1.383	99% Chebyshev (MVUE) UCL	3.174

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.831	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.15		
nu star	41.53		
Approximate Chi Square Value (.05)	27.76	Nonparametric Statistics	
Adjusted Level of Significance	0.0395	95% CLT UCL	1.353
Adjusted Chi Square Value	26.99	95% Jackknife UCL	1.369
		95% Standard Bootstrap UCL	1.353
Anderson-Darling Test Statistic	2.142	95% Bootstrap-t UCL	1.559
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	1.396
Kolmogorov-Smirnov Test Statistic	0.254	95% Percentile Bootstrap UCL	1.33
Kolmogorov-Smirnov 5% Critical Value	0.18	95% BCA Bootstrap UCL	1.459
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.008
		97.5% Chebyshev(Mean, Sd) UCL	2.463
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.358
95% Approximate Gamma UCL	1.43		
95% Adjusted Gamma UCL	1.47		

Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		3.358
Result or 1/2 SDL (chrysene)				
General Statistics				
Number of Valid Samples		48	Number of Unique Samples	
			39	
Raw Statistics			Log-transformed Statistics	
	Minimum	0.0037	Minimum of Log Data	-5.579
	Maximum	4.05	Maximum of Log Data	1.399
	Mean	0.217	Mean of log Data	-3.867
	Median	0.0077	SD of log Data	1.845
	SD	0.715		
	Coefficient of Variation	3.295		
	Skewness	4.448		
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
	Shapiro Wilk Test Statistic	0.344	Shapiro Wilk Test Statistic	0.809
	Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
	95% Student's-t UCL	0.39	95% H-UCL	0.284
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.278
	95% Adjusted-CLT UCL	0.457	97.5% Chebyshev (MVUE) UCL	0.353
	95% Modified-t UCL	0.401	99% Chebyshev (MVUE) UCL	0.499
Gamma Distribution Test			Data Distribution	
	k star (bias corrected)	0.291	Data do not follow a Discernable Distribution (0.05)	
	Theta Star	0.746		
	nu star	27.93		
Approximate Chi Square Value (.05)			Nonparametric Statistics	
	Adjusted Level of Significance	0.045	95% CLT UCL	0.387
	Adjusted Chi Square Value	16.61	95% Jackknife UCL	0.39
			95% Standard Bootstrap UCL	0.386
	Anderson-Darling Test Statistic	6.798	95% Bootstrap-t UCL	0.914
	Anderson-Darling 5% Critical Value	0.864	95% Hall's Bootstrap UCL	1.021
	Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	0.395
	Kolmogorov-Smirnov 5% Critical Value	0.139	95% BCA Bootstrap UCL	0.484
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.667
			97.5% Chebyshev(Mean, Sd) UCL	0.861
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	1.244
	95% Approximate Gamma UCL	0.359		
	95% Adjusted Gamma UCL	0.365		
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	
			1.244	

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		46
Raw Statistics			Log-transformed Statistics		
Minimum		3	Minimum of Log Data		1.099
Maximum		9.89	Maximum of Log Data		2.292
Mean		6.977	Mean of log Data		1.92
Median		7.29	SD of log Data		0.223
SD		1.408			
Coefficient of Variation		0.202			
Skewness		-0.339			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.973	Shapiro Wilk Test Statistic		0.927
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data appear Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		7.318	95% H-UCL		7.397
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		7.977
95% Adjusted-CLT UCL		7.3	97.5% Chebyshev (MVUE) UCL		8.405
95% Modified-t UCL		7.316	99% Chebyshev (MVUE) UCL		9.245
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		21.03	Data appear Normal at 5% Significance Level		
Theta Star		0.332			
nu star		2019			
Approximate Chi Square Value (.05)		1915	Nonparametric Statistics		
Adjusted Level of Significance		0.045	95% CLT UCL		7.311
Adjusted Chi Square Value		1912	95% Jackknife UCL		7.318
			95% Standard Bootstrap UCL		7.303
Anderson-Darling Test Statistic		0.753	95% Bootstrap-t UCL		7.303
Anderson-Darling 5% Critical Value		0.748	95% Hall's Bootstrap UCL		7.301
Kolmogorov-Smirnov Test Statistic		0.15	95% Percentile Bootstrap UCL		7.294
Kolmogorov-Smirnov 5% Critical Value		0.128	95% BCA Bootstrap UCL		7.295
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		7.863
			97.5% Chebyshev(Mean, Sd) UCL		8.246
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		8.999
95% Approximate Gamma UCL		7.353			
95% Adjusted Gamma UCL		7.365			
Potential UCL to Use			Use 95% Student's-t UCL		7.318

Result or 1/2 SDL (copper)

General Statistics									
Number of Valid Samples				48	Number of Unique Samples				44
Raw Statistics					Log-transformed Statistics				
Minimum			5.44	Minimum of Log Data			1.694		

	Maximum	49			Maximum of Log Data	3.892					
	Mean	14.49			Mean of log Data	2.553					
	Median	13.15			SD of log Data	0.471					
	SD	8.49									
	Coefficient of Variation	0.586									
	Skewness	2.371									

Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.755		Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.947		Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	16.55		95% H-UCL	16.31
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	18.75
95% Adjusted-CLT UCL	16.96		97.5% Chebyshev (MVUE) UCL	20.66
95% Modified-t UCL	16.62		99% Chebyshev (MVUE) UCL	24.43
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	4.055		Data appear Lognormal at 5% Significance Level	
Theta Star	3.574			
nu star	389.3			
Approximate Chi Square Value (.05)	344.6		Nonparametric Statistics	
Adjusted Level of Significance	0.045		95% CLT UCL	16.51
Adjusted Chi Square Value	343.3		95% Jackknife UCL	16.55
			95% Standard Bootstrap UCL	16.5
Anderson-Darling Test Statistic	1.342		95% Bootstrap-t UCL	17.15
Anderson-Darling 5% Critical Value	0.753		95% Hall's Bootstrap UCL	17.64
Kolmogorov-Smirnov Test Statistic	0.159		95% Percentile Bootstrap UCL	16.71
Kolmogorov-Smirnov 5% Critical Value	0.128		95% BCA Bootstrap UCL	17.17
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	19.83
			97.5% Chebyshev(Mean, Sd) UCL	22.14
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	26.68
95% Approximate Gamma UCL	16.37			
95% Adjusted Gamma UCL	16.43			
Potential UCL to Use			Use 95% Student's-t UCL	16.55
			or 95% Modified-t UCL	16.62
			or 95% H-UCL	16.31

Result or 1/2 SDL (dibenz(a,h)anthracene)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		39
Raw Statistics			Log-transformed Statistics		
Minimum		0.0031	Minimum of Log Data		-5.752
Maximum		2.91	Maximum of Log Data		1.068
Mean		0.203	Mean of log Data		-3.828
Median		0.0188	SD of log Data		1.8

SD	0.625		
Coefficient of Variation	3.076		
Skewness	3.829		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.355	Shapiro Wilk Test Statistic	0.83
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.354	95% H-UCL	0.262
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.263
95% Adjusted-CLT UCL	0.405	97.5% Chebyshev (MVUE) UCL	0.333
95% Modified-t UCL	0.363	99% Chebyshev (MVUE) UCL	0.47
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.302	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.672		
nu star	29.01		
Approximate Chi Square Value (.05)	17.72	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.351
Adjusted Chi Square Value	17.44	95% Jackknife UCL	0.354
		95% Standard Bootstrap UCL	0.356
Anderson-Darling Test Statistic	6.795	95% Bootstrap-t UCL	0.558
Anderson-Darling 5% Critical Value	0.86	95% Hall's Bootstrap UCL	0.358
Kolmogorov-Smirnov Test Statistic	0.33	95% Percentile Bootstrap UCL	0.371
Kolmogorov-Smirnov 5% Critical Value	0.139	95% BCA Bootstrap UCL	0.421
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.596
		97.5% Chebyshev(Mean, Sd) UCL	0.766
		99% Chebyshev(Mean, Sd) UCL	1.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.333		
95% Adjusted Gamma UCL	0.338		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.1

Result or 1/2 SDL (dibenzofuran)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	0.0025	Minimum of Log Data	-5.98
Maximum	0.08	Maximum of Log Data	-2.526
Mean	0.0139	Mean of log Data	-4.779
Median	0.0079	SD of log Data	0.932
SD	0.0176		
Coefficient of Variation	1.267		
Skewness	2.343		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.626		Shapiro Wilk Test Statistic		0.877	
Shapiro Wilk Critical Value		0.947		Shapiro Wilk Critical Value		0.947	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		0.0182		95% H-UCL		0.0176	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		0.0215	
95% Adjusted-CLT UCL		0.019		97.5% Chebyshev (MVUE) UCL		0.0253	
95% Modified-t UCL		0.0183		99% Chebyshev (MVUE) UCL		0.0326	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		1.075		Data do not follow a Discernable Distribution (0.05)			
Theta Star		0.0129					
nu star		103.2					
Approximate Chi Square Value (.05)		80.74		Nonparametric Statistics			
Adjusted Level of Significance		0.045		95% CLT UCL		0.0181	
Adjusted Chi Square Value		80.12		95% Jackknife UCL		0.0182	
				95% Standard Bootstrap UCL		0.0179	
Anderson-Darling Test Statistic		3.619		95% Bootstrap-t UCL		0.0192	
Anderson-Darling 5% Critical Value		0.776		95% Hall's Bootstrap UCL		0.0184	
Kolmogorov-Smirnov Test Statistic		0.281		95% Percentile Bootstrap UCL		0.0181	
Kolmogorov-Smirnov 5% Critical Value		0.131		95% BCA Bootstrap UCL		0.0191	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		0.025	
				97.5% Chebyshev(Mean, Sd) UCL		0.0298	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0392	
95% Approximate Gamma UCL		0.0178					
95% Adjusted Gamma UCL		0.0179					
Potential UCL to Use				Use 95% Chebyshev (Mean, Sd) UCL		0.025	

Result or 1/2 SDL (endosulfan sulfate)

General Statistics			
Number of Valid Samples		48	
Number of Unique Samples			45
Raw Statistics		Log-transformed Statistics	
Minimum	1.4450E-4	Minimum of Log Data	-8.842
Maximum	0.06	Maximum of Log Data	-2.813
Mean	0.0018	Mean of log Data	-8.104
Median	2.1800E-4	SD of log Data	1.163
SD	0.0087		
Coefficient of Variation	4.664		
Skewness	6.541		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		0.213	
Shapiro Wilk Critical Value		0.947	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.626	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0017		
nu star	60.13		
Approximate Chi Square Value (.05)	43.3	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0016
Adjusted Chi Square Value	42.86	95% Jackknife UCL	0.0016
		95% Standard Bootstrap UCL	0.0016
Anderson-Darling Test Statistic	8.68	95% Bootstrap-t UCL	0.0019
Anderson-Darling 5% Critical Value	0.8	95% Hall's Bootstrap UCL	0.0017
Kolmogorov-Smirnov Test Statistic	0.36	95% Percentile Bootstrap UCL	0.0016
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	0.0017
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0025
		97.5% Chebyshev(Mean, Sd) UCL	0.0031
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0043
95% Approximate Gamma UCL	0.0015		
95% Adjusted Gamma UCL	0.0015		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0043

Result or 1/2 SDL (endrin ketone)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	47
Raw Statistics		Log-transformed Statistics	
Minimum	1.8950E-4	Minimum of Log Data	-8.571
Maximum	0.013	Maximum of Log Data	-4.343
Mean	7.8543E-4	Mean of log Data	-7.945
Median	2.7550E-4	SD of log Data	0.865
SD	0.0020		
Coefficient of Variation	2.622		
Skewness	5.076		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.31	Shapiro Wilk Test Statistic	0.565
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0012	95% H-UCL	6.7884E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.2500E-4
95% Adjusted-CLT UCL	0.0015	97.5% Chebyshev (MVUE) UCL	9.6143E-4
95% Modified-t UCL	0.0013	99% Chebyshev (MVUE) UCL	0.0012
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.719	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0010		
nu star	68.98		

Approximate Chi Square Value (.05)	50.86	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.0012
Adjusted Chi Square Value	50.38	95% Jackknife UCL	0.0012
		95% Standard Bootstrap UCL	0.0012
Anderson-Darling Test Statistic	11.56	95% Bootstrap-t UCL	0.0024
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	0.0028
Kolmogorov-Smirnov Test Statistic	0.412	95% Percentile Bootstrap UCL	0.0013
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0016
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0020
		97.5% Chebyshev(Mean, Sd) UCL	0.0026
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0037
95% Approximate Gamma UCL	0.0010		
95% Adjusted Gamma UCL	0.0010		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0020

Result or 1/2 SDL (fluoranthene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	34
Raw Statistics		Log-transformed Statistics	
Minimum	0.0032	Minimum of Log Data	-5.734
Maximum	2.17	Maximum of Log Data	0.775
Mean	0.108	Mean of log Data	-4.039
Median	0.0065	SD of log Data	1.566
SD	0.368		
Coefficient of Variation	3.399		
Skewness	4.909		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.198	95% H-UCL	0.119
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.132
95% Adjusted-CLT UCL	0.236	97.5% Chebyshev (MVUE) UCL	0.165
95% Modified-t UCL	0.204	99% Chebyshev (MVUE) UCL	0.229
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.358	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.302		
nu star	34.4		
Approximate Chi Square Value (.05)	21.98	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.196
Adjusted Chi Square Value	21.67	95% Jackknife UCL	0.198
		95% Standard Bootstrap UCL	0.196
Anderson-Darling Test Statistic	6.501	95% Bootstrap-t UCL	0.656

Anderson-Darling 5% Critical Value	0.846	95% Hall's Bootstrap UCL	0.596
Kolmogorov-Smirnov Test Statistic	0.282	95% Percentile Bootstrap UCL	0.206
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	0.264
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.34
		97.5% Chebyshev(Mean, Sd) UCL	0.44
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.637
95% Approximate Gamma UCL	0.17		
95% Adjusted Gamma UCL	0.172		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.637

Result or 1/2 SDL (fluorene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	38
Raw Statistics		Log-transformed Statistics	
Minimum	0.0033	Minimum of Log Data	-5.715
Maximum	0.139	Maximum of Log Data	-1.973
Mean	0.0186	Mean of log Data	-4.783
Median	0.0055	SD of log Data	1.084
SD	0.0314		
Coefficient of Variation	1.687		
Skewness	2.593		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.54	Shapiro Wilk Test Statistic	0.73
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0262	95% H-UCL	0.022
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0268
95% Adjusted-CLT UCL	0.0279	97.5% Chebyshev (MVUE) UCL	0.0321
95% Modified-t UCL	0.0265	99% Chebyshev (MVUE) UCL	0.0423
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.717	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0259		
nu star	68.81		
Approximate Chi Square Value (.05)	50.71	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.026
Adjusted Chi Square Value	50.23	95% Jackknife UCL	0.0262
		95% Standard Bootstrap UCL	0.0258
Anderson-Darling Test Statistic	7.338	95% Bootstrap-t UCL	0.0295
Anderson-Darling 5% Critical Value	0.792	95% Hall's Bootstrap UCL	0.0286
Kolmogorov-Smirnov Test Statistic	0.359	95% Percentile Bootstrap UCL	0.0263
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	0.0287
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0383
		97.5% Chebyshev(Mean, Sd) UCL	0.0469

Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		0.0637
95% Approximate Gamma UCL		0.0252				
95% Adjusted Gamma UCL		0.0255				
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		0.0637
Result or 1/2 SDL (gamma-chlordane)						
General Statistics						
Number of Valid Samples		48		Number of Unique Samples		45
Raw Statistics			Log-transformed Statistics			
		Minimum	1.2000E-4	Minimum of Log Data		-9.028
		Maximum	0.0036	Maximum of Log Data		-5.627
		Mean	4.0476E-4	Mean of log Data		-8.298
		Median	2.1800E-4	SD of log Data		0.781
		SD	6.7074E-4			
		Coefficient of Variation	1.657			
		Skewness	3.738			
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.435	Shapiro Wilk Test Statistic		0.75	
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		5.6720E-4	95% H-UCL		4.2977E-4	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		5.1879E-4	
95% Adjusted-CLT UCL		6.1982E-4	97.5% Chebyshev (MVUE) UCL		5.9820E-4	
95% Modified-t UCL		5.7591E-4	99% Chebyshev (MVUE) UCL		7.5419E-4	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		1.11	Data do not follow a Discernable Distribution (0.05)			
Theta Star		3.6480E-4				
nu star		106.5				
Approximate Chi Square Value (.05)		83.7	Nonparametric Statistics			
Adjusted Level of Significance		0.045	95% CLT UCL		5.6400E-4	
Adjusted Chi Square Value		83.07	95% Jackknife UCL		5.6720E-4	
			95% Standard Bootstrap UCL		5.6162E-4	
Anderson-Darling Test Statistic		6.585	95% Bootstrap-t UCL		7.3616E-4	
Anderson-Darling 5% Critical Value		0.775	95% Hall's Bootstrap UCL		6.0334E-4	
Kolmogorov-Smirnov Test Statistic		0.299	95% Percentile Bootstrap UCL		5.7445E-4	
Kolmogorov-Smirnov 5% Critical Value		0.131	95% BCA Bootstrap UCL		6.5255E-4	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		8.2676E-4	
			97.5% Chebyshev(Mean, Sd) UCL		0.0010	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.0013	
95% Approximate Gamma UCL		5.1511E-4				
95% Adjusted Gamma UCL		5.1899E-4				
Potential UCL to Use			Use 95% Chebyshev (Mean, Sd) UCL		8.2676E-4	

Result or 1/2 SDL (indeno(1,2,3-cd)pyrene)			
General Statistics			
Number of Valid Samples	48	Number of Unique Samples	40
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	1.94	Maximum of Log Data	0.663
Mean	0.201	Mean of log Data	-3.037
Median	0.0629	SD of log Data	1.674
SD	0.407		
Coefficient of Variation	2.025		
Skewness	2.987		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.535	Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.299	95% H-UCL	0.419
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.446
95% Adjusted-CLT UCL	0.324	97.5% Chebyshev (MVUE) UCL	0.56
95% Modified-t UCL	0.304	99% Chebyshev (MVUE) UCL	0.784
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.437	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.46		
nu star	41.91		
Approximate Chi Square Value (.05)	28.07	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.297
Adjusted Chi Square Value	27.72	95% Jackknife UCL	0.299
		95% Standard Bootstrap UCL	0.294
Anderson-Darling Test Statistic	3.169	95% Bootstrap-t UCL	0.344
Anderson-Darling 5% Critical Value	0.826	95% Hall's Bootstrap UCL	0.329
Kolmogorov-Smirnov Test Statistic	0.199	95% Percentile Bootstrap UCL	0.308
Kolmogorov-Smirnov 5% Critical Value	0.136	95% BCA Bootstrap UCL	0.325
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.457
		97.5% Chebyshev(Mean, Sd) UCL	0.567
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.785
95% Approximate Gamma UCL	0.3		
95% Adjusted Gamma UCL	0.304		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.785

Result or 1/2 SDL (iron)

General Statistics

Number of Valid Samples				48	Number of Unique Samples				37
Raw Statistics					Log-transformed Statistics				
	Minimum	11100				Minimum of Log Data	9.315		
	Maximum	60900				Maximum of Log Data	11.02		
	Mean	17152				Mean of log Data	9.71		
	Median	16650				SD of log Data	0.25		
	SD	6903							
	Coefficient of Variation	0.402							
	Skewness	5.582							
Relevant UCL Statistics									
Normal Distribution Test					Lognormal Distribution Test				
	Shapiro Wilk Test Statistic	0.466				Shapiro Wilk Test Statistic	0.759		
	Shapiro Wilk Critical Value	0.947				Shapiro Wilk Critical Value	0.947		
Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level				
Assuming Normal Distribution					Assuming Lognormal Distribution				
	95% Student's-t UCL	18824				95% H-UCL	18113		
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	19692		
	95% Adjusted-CLT UCL	19649				97.5% Chebyshev (MVUE) UCL	20862		
	95% Modified-t UCL	18958				99% Chebyshev (MVUE) UCL	23161		
Gamma Distribution Test					Data Distribution				
	k star (bias corrected)	11.83			Data do not follow a Discernable Distribution (0.05)				
	Theta Star	1450							
	nu star	1135							
	Approximate Chi Square Value (.05)	1058			Nonparametric Statistics				
	Adjusted Level of Significance	0.045				95% CLT UCL	18791		
	Adjusted Chi Square Value	1056				95% Jackknife UCL	18824		
						95% Standard Bootstrap UCL	18743		
	Anderson-Darling Test Statistic	3.403				95% Bootstrap-t UCL	20880		
	Anderson-Darling 5% Critical Value	0.749				95% Hall's Bootstrap UCL	25732		
	Kolmogorov-Smirnov Test Statistic	0.204				95% Percentile Bootstrap UCL	18919		
	Kolmogorov-Smirnov 5% Critical Value	0.128				95% BCA Bootstrap UCL	20054		
Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	21495		
						97.5% Chebyshev(Mean, Sd) UCL	23374		
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL	27065		
	95% Approximate Gamma UCL	18404							
	95% Adjusted Gamma UCL	18444							
Potential UCL to Use						Use 95% Student's-t UCL	18824		
						or 95% Modified-t UCL	18958		

Result or 1/2 SDL (lead)

General Statistics									
Number of Valid Samples				48	Number of Unique Samples				45
Raw Statistics					Log-transformed Statistics				
	Minimum	9.4				Minimum of Log Data	2.241		

Maximum	237	Maximum of Log Data	5.468
Mean	25.36	Mean of log Data	2.969
Median	16.7	SD of log Data	0.571
SD	34.13		
Coefficient of Variation	1.346		
Skewness	5.449		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.385	Shapiro Wilk Test Statistic	0.778
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	33.62	95% H-UCL	26.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.57
95% Adjusted-CLT UCL	37.6	97.5% Chebyshev (MVUE) UCL	35.35
95% Modified-t UCL	34.27	99% Chebyshev (MVUE) UCL	42.77
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.932	Data do not follow a Discernable Distribution (0.05)	
Theta Star	13.13		
nu star	185.5		
Approximate Chi Square Value (.05)	155	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	33.46
Adjusted Chi Square Value	154.1	95% Jackknife UCL	33.62
		95% Standard Bootstrap UCL	33.36
Anderson-Darling Test Statistic	5.696	95% Bootstrap-t UCL	50.53
Anderson-Darling 5% Critical Value	0.762	95% Hall's Bootstrap UCL	62.18
Kolmogorov-Smirnov Test Statistic	0.264	95% Percentile Bootstrap UCL	34.16
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	39.39
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.83
		97.5% Chebyshev(Mean, Sd) UCL	56.12
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	74.38
95% Approximate Gamma UCL	30.35		
95% Adjusted Gamma UCL	30.52		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	46.83

Result or 1/2 SDL (lithium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	43
Raw Statistics		Log-transformed Statistics	
Minimum	5.43	Minimum of Log Data	1.692
Maximum	27.6	Maximum of Log Data	3.318
Mean	18.65	Mean of log Data	2.9
Median	18.75	SD of log Data	0.25
SD	3.754		
Coefficient of Variation	0.201		

Skewness				-0.745			
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.966		Shapiro Wilk Test Statistic		0.819	
Shapiro Wilk Critical Value		0.947		Shapiro Wilk Critical Value		0.947	
Data appear Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		19.56		95% H-UCL		19.99	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		21.73	
95% Adjusted-CLT UCL		19.48		97.5% Chebyshev (MVUE) UCL		23.03	
95% Modified-t UCL		19.55		99% Chebyshev (MVUE) UCL		25.57	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		18.42		Data appear Normal at 5% Significance Level			
Theta Star		1.013					
nu star		1768					
Approximate Chi Square Value (.05)		1671		Nonparametric Statistics			
Adjusted Level of Significance		0.045		95% CLT UCL		19.55	
Adjusted Chi Square Value		1668		95% Jackknife UCL		19.56	
				95% Standard Bootstrap UCL		19.55	
Anderson-Darling Test Statistic		1.236		95% Bootstrap-t UCL		19.53	
Anderson-Darling 5% Critical Value		0.748		95% Hall's Bootstrap UCL		19.55	
Kolmogorov-Smirnov Test Statistic		0.139		95% Percentile Bootstrap UCL		19.51	
Kolmogorov-Smirnov 5% Critical Value		0.128		95% BCA Bootstrap UCL		19.49	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		21.02	
				97.5% Chebyshev(Mean, Sd) UCL		22.04	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		24.05	
95% Approximate Gamma UCL		19.73					
95% Adjusted Gamma UCL		19.77					
Potential UCL to Use				Use 95% Student's-t UCL		19.56	

Result or 1/2 SDL (manganese)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		48
Raw Statistics			Log-transformed Statistics		
Minimum		87.6	Minimum of Log Data		4.473
Maximum		1010	Maximum of Log Data		6.918
Mean		331.8	Mean of log Data		5.638
Median		275	SD of log Data		0.583
SD		205.9			
Coefficient of Variation		0.621			
Skewness		1.558			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.856	Shapiro Wilk Test Statistic		0.975

Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		381.7	95% H-UCL		392.8
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		461.4
95% Adjusted-CLT UCL		387.8	97.5% Chebyshev (MVUE) UCL		517.6
95% Modified-t UCL		382.8	99% Chebyshev (MVUE) UCL		627.9
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		2.977	Data appear Gamma Distributed at 5% Significance Level		
Theta Star		111.4			
nu star		285.8			
Approximate Chi Square Value (.05)		247.7	Nonparametric Statistics		
Adjusted Level of Significance		0.045	95% CLT UCL		380.7
Adjusted Chi Square Value		246.6	95% Jackknife UCL		381.7
			95% Standard Bootstrap UCL		380.3
Anderson-Darling Test Statistic		0.491	95% Bootstrap-t UCL		391.8
Anderson-Darling 5% Critical Value		0.756	95% Hall's Bootstrap UCL		391.7
Kolmogorov-Smirnov Test Statistic		0.116	95% Percentile Bootstrap UCL		382.9
Kolmogorov-Smirnov 5% Critical Value		0.129	95% BCA Bootstrap UCL		389.1
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		461.3
			97.5% Chebyshev(Mean, Sd) UCL		517.4
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		627.5
95% Approximate Gamma UCL		382.9			
95% Adjusted Gamma UCL		384.6			
Potential UCL to Use			Use 95% Approximate Gamma UCL		382.9

Result or 1/2 SDL (mercury)

General Statistics					
Number of Valid Samples		48	Number of Unique Samples		36
Raw Statistics			Log-transformed Statistics		
Minimum		0.0012	Minimum of Log Data		-6.685
Maximum		0.081	Maximum of Log Data		-2.513
Mean		0.0199	Mean of log Data		-4.305
Median		0.0113	SD of log Data		0.893
SD		0.0194			
Coefficient of Variation		0.974			
Skewness		1.757			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.756	Shapiro Wilk Test Statistic		0.958
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.0246	95% H-UCL		0.0268

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0327
95% Adjusted-CLT UCL	0.0253	97.5% Chebyshev (MVUE) UCL		0.0382
95% Modified-t UCL	0.0247	99% Chebyshev (MVUE) UCL		0.0491
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	1.356	Data appear Lognormal at 5% Significance Level		
Theta Star	0.0147			
nu star	130.2			
Approximate Chi Square Value (.05)	104.8	Nonparametric Statistics		
Adjusted Level of Significance	0.045	95% CLT UCL		0.0245
Adjusted Chi Square Value	104.1	95% Jackknife UCL		0.0246
		95% Standard Bootstrap UCL		0.0245
Anderson-Darling Test Statistic	1.641	95% Bootstrap-t UCL		0.0254
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL		0.0252
Kolmogorov-Smirnov Test Statistic	0.194	95% Percentile Bootstrap UCL		0.0247
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL		0.0254
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0321
		97.5% Chebyshev(Mean, Sd) UCL		0.0374
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.0478
95% Approximate Gamma UCL	0.0247			
95% Adjusted Gamma UCL	0.0249			
Potential UCL to Use		Use 95% H-UCL		0.0268

Result or 1/2 SDL (molybdenum)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	0.037	Minimum of Log Data	-3.297
Maximum	3.24	Maximum of Log Data	1.176
Mean	0.581	Mean of log Data	-1.175
Median	0.38	SD of log Data	1.255
SD	0.677		
Coefficient of Variation	1.166		
Skewness	2.313		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.745	95% H-UCL	1.094
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.312
95% Adjusted-CLT UCL	0.776	97.5% Chebyshev (MVUE) UCL	1.593
95% Modified-t UCL	0.75	99% Chebyshev (MVUE) UCL	2.147
Gamma Distribution Test		Data Distribution	

k star (bias corrected)	0.88	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.66		
nu star	84.46		
Approximate Chi Square Value (.05)	64.28	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.741
Adjusted Chi Square Value	63.73	95% Jackknife UCL	0.745
		95% Standard Bootstrap UCL	0.738
Anderson-Darling Test Statistic	0.995	95% Bootstrap-t UCL	0.793
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	0.796
Kolmogorov-Smirnov Test Statistic	0.126	95% Percentile Bootstrap UCL	0.746
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	0.777
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.006
		97.5% Chebyshev(Mean, Sd) UCL	1.191
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.553
95% Approximate Gamma UCL	0.763		
95% Adjusted Gamma UCL	0.769		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.763

Result or 1/2 SDL (nickel)

General Statistics			
Number of Valid Samples	50	Number of Unique Samples	43
Raw Statistics		Log-transformed Statistics	
Minimum	10.9	Minimum of Log Data	2.389
Maximum	27.7	Maximum of Log Data	3.321
Mean	17.29	Mean of log Data	2.831
Median	17.3	SD of log Data	0.197
SD	3.391		
Coefficient of Variation	0.196		
Skewness	0.421		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Test Statistic	0.979
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.09	95% H-UCL	18.15
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.41
95% Adjusted-CLT UCL	18.11	97.5% Chebyshev (MVUE) UCL	20.33
95% Modified-t UCL	18.09	99% Chebyshev (MVUE) UCL	22.13
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	25.02	Data appear Normal at 5% Significance Level	
Theta Star	0.691		
nu star	2502		
Approximate Chi Square Value (.05)	2387	Nonparametric Statistics	
Adjusted Level of Significance	0.0452	95% CLT UCL	18.07

Adjusted Chi Square Value	2383	95% Jackknife UCL	18.09
		95% Standard Bootstrap UCL	18.07
Anderson-Darling Test Statistic	0.338	95% Bootstrap-t UCL	18.09
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	18.12
Kolmogorov-Smirnov Test Statistic	0.0827	95% Percentile Bootstrap UCL	18.04
Kolmogorov-Smirnov 5% Critical Value	0.125	95% BCA Bootstrap UCL	18.05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.38
		97.5% Chebyshev(Mean, Sd) UCL	20.28
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.06
95% Approximate Gamma UCL	18.12		
95% Adjusted Gamma UCL	18.15		
Potential UCL to Use		Use 95% Student's-t UCL	18.09

Result or 1/2 SDL (phenanthrene)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	41
Raw Statistics		Log-transformed Statistics	
Minimum	0.0030	Minimum of Log Data	-5.783
Maximum	1.3	Maximum of Log Data	0.262
Mean	0.0761	Mean of log Data	-4.26
Median	0.0070	SD of log Data	1.508
SD	0.248		
Coefficient of Variation	3.26		
Skewness	4.606		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.84
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.136	95% H-UCL	0.0837
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0947
95% Adjusted-CLT UCL	0.16	97.5% Chebyshev (MVUE) UCL	0.118
95% Modified-t UCL	0.14	99% Chebyshev (MVUE) UCL	0.162
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.381	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.2		
nu star	36.62		
Approximate Chi Square Value (.05)	23.77	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.135
Adjusted Chi Square Value	23.45	95% Jackknife UCL	0.136
		95% Standard Bootstrap UCL	0.136
Anderson-Darling Test Statistic	5.99	95% Bootstrap-t UCL	0.472
Anderson-Darling 5% Critical Value	0.84	95% Hall's Bootstrap UCL	0.43
Kolmogorov-Smirnov Test Statistic	0.276	95% Percentile Bootstrap UCL	0.139

Kolmogorov-Smirnov 5% Critical Value		0.137	95% BCA Bootstrap UCL		0.161
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.232
			97.5% Chebyshev(Mean, Sd) UCL		0.3
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.432
95% Approximate Gamma UCL		0.117			
95% Adjusted Gamma UCL		0.119			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.432
Result or 1/2 SDL (pyrene)					
General Statistics					
Number of Valid Samples		48	Number of Unique Samples		38
Raw Statistics			Log-transformed Statistics		
Minimum		0.0040	Minimum of Log Data		-5.502
Maximum		1.64	Maximum of Log Data		0.495
Mean		0.154	Mean of log Data		-3.58
Median		0.0113	SD of log Data		1.729
SD		0.355			
Coefficient of Variation		2.305			
Skewness		3.1			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.48	Shapiro Wilk Test Statistic		0.843
Shapiro Wilk Critical Value		0.947	Shapiro Wilk Critical Value		0.947
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.24	95% H-UCL		0.279
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		0.29
95% Adjusted-CLT UCL		0.263	97.5% Chebyshev (MVUE) UCL		0.366
95% Modified-t UCL		0.244	99% Chebyshev (MVUE) UCL		0.514
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		0.377	Data do not follow a Discernable Distribution (0.05)		
Theta Star		0.408			
nu star		36.18			
Approximate Chi Square Value (.05)		23.41	Nonparametric Statistics		
Adjusted Level of Significance		0.045	95% CLT UCL		0.238
Adjusted Chi Square Value		23.1	95% Jackknife UCL		0.24
			95% Standard Bootstrap UCL		0.236
Anderson-Darling Test Statistic		4.849	95% Bootstrap-t UCL		0.29
Anderson-Darling 5% Critical Value		0.841	95% Hall's Bootstrap UCL		0.247
Kolmogorov-Smirnov Test Statistic		0.256	95% Percentile Bootstrap UCL		0.242
Kolmogorov-Smirnov 5% Critical Value		0.137	95% BCA Bootstrap UCL		0.272
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.377
			97.5% Chebyshev(Mean, Sd) UCL		0.474
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.663
95% Approximate Gamma UCL		0.238			

95% Adjusted Gamma UCL		0.241			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.663
Result or 1/2 SDL (strontium)					
General Statistics					
Number of Valid Samples		48	Number of Unique Samples		47
Raw Statistics			Log-transformed Statistics		
Minimum	18.8	Minimum of Log Data	2.934		
Maximum	330	Maximum of Log Data	5.799		
Mean	67	Mean of log Data	4.025		
Median	54	SD of log Data	0.557		
SD	52.81				
Coefficient of Variation	0.788				
Skewness	3.229				
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.671	Shapiro Wilk Test Statistic	0.953		
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947		
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL	79.79	95% H-UCL	76.38		
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		
95% Adjusted-CLT UCL	83.33	97.5% Chebyshev (MVUE) UCL	99.75		
95% Modified-t UCL	80.38	99% Chebyshev (MVUE) UCL	120.3		
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	2.764	Data appear Lognormal at 5% Significance Level			
Theta Star	24.24				
nu star	265.3				
Approximate Chi Square Value (.05)	228.6	Nonparametric Statistics			
Adjusted Level of Significance	0.045	95% CLT UCL	79.53		
Adjusted Chi Square Value	227.6	95% Jackknife UCL	79.79		
		95% Standard Bootstrap UCL	79.52		
Anderson-Darling Test Statistic	1.725	95% Bootstrap-t UCL	87.35		
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	98.08		
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	80.25		
Kolmogorov-Smirnov 5% Critical Value	0.129	95% BCA Bootstrap UCL	84.92		
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	100.2	
			97.5% Chebyshev(Mean, Sd) UCL	114.6	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	142.8	
95% Approximate Gamma UCL	77.76				
95% Adjusted Gamma UCL	78.12				
Potential UCL to Use			Use 95% H-UCL	76.38	

Result or 1/2 SDL (tin)			
General Statistics			
Number of Valid Samples	48	Number of Unique Samples	31
Raw Statistics		Log-transformed Statistics	
Minimum	0.2	Minimum of Log Data	-1.609
Maximum	4.61	Maximum of Log Data	1.528
Mean	0.638	Mean of log Data	-0.895
Median	0.3	SD of log Data	0.728
SD	0.991		
Coefficient of Variation	1.554		
Skewness	3.165		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.408	Shapiro Wilk Test Statistic	0.62
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.877	95% H-UCL	0.663
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.795
95% Adjusted-CLT UCL	0.943	97.5% Chebyshev (MVUE) UCL	0.911
95% Modified-t UCL	0.888	99% Chebyshev (MVUE) UCL	1.137
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.199	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.532		
nu star	115.1		
Approximate Chi Square Value (.05)	91.31	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	0.873
Adjusted Chi Square Value	90.65	95% Jackknife UCL	0.877
		95% Standard Bootstrap UCL	0.87
Anderson-Darling Test Statistic	9.6	95% Bootstrap-t UCL	1.091
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	0.828
Kolmogorov-Smirnov Test Statistic	0.344	95% Percentile Bootstrap UCL	0.872
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	0.958
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.261
		97.5% Chebyshev(Mean, Sd) UCL	1.531
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.061
95% Approximate Gamma UCL	0.803		
95% Adjusted Gamma UCL	0.809		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.261

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	48	Number of Unique Samples	44

Raw Statistics			Log-transformed Statistics		
	Minimum	8.15		Minimum of Log Data	2.098
	Maximum	68.7		Maximum of Log Data	4.23
	Mean	29.14		Mean of log Data	3.267
	Median	28		SD of log Data	0.465
	SD	13.88			
	Coefficient of Variation	0.476			
	Skewness	1.065			

Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.909		Shapiro Wilk Test Statistic	0.978
	Shapiro Wilk Critical Value	0.947		Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	32.5		95% H-UCL	33.16
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	38.06
	95% Adjusted-CLT UCL	32.77		97.5% Chebyshev (MVUE) UCL	41.92
	95% Modified-t UCL	32.55		99% Chebyshev (MVUE) UCL	49.49
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	4.618	Data appear Gamma Distributed at 5% Significance Level		
	Theta Star	6.31			
	nu star	443.3			
	Approximate Chi Square Value (.05)	395.5	Nonparametric Statistics		
	Adjusted Level of Significance	0.045		95% CLT UCL	32.44
	Adjusted Chi Square Value	394.1		95% Jackknife UCL	32.5
				95% Standard Bootstrap UCL	32.46
	Anderson-Darling Test Statistic	0.49		95% Bootstrap-t UCL	32.95
	Anderson-Darling 5% Critical Value	0.753		95% Hall's Bootstrap UCL	32.98
	Kolmogorov-Smirnov Test Statistic	0.109		95% Percentile Bootstrap UCL	32.54
	Kolmogorov-Smirnov 5% Critical Value	0.128		95% BCA Bootstrap UCL	32.94
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	37.87
				97.5% Chebyshev(Mean, Sd) UCL	41.65
				99% Chebyshev(Mean, Sd) UCL	49.08
Assuming Gamma Distribution					
	95% Approximate Gamma UCL	32.66			
	95% Adjusted Gamma UCL	32.78			
Potential UCL to Use				Use 95% Approximate Gamma UCL	32.66

Result or 1/2 SDL (toluene)

General Statistics					
	Number of Valid Samples	48		Number of Unique Samples	44
Raw Statistics			Log-transformed Statistics		
	Minimum	2.9700E-4		Minimum of Log Data	-8.122
	Maximum	0.0064		Maximum of Log Data	-5.051
	Mean	6.5492E-4		Mean of log Data	-7.638
	Median	3.6725E-4		SD of log Data	0.612

SD	9.3955E-4		
Coefficient of Variation	1.435		
Skewness	5.23		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.385	Shapiro Wilk Test Statistic	0.676
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.8247E-4	95% H-UCL	6.9234E-4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.1723E-4
95% Adjusted-CLT UCL	9.8737E-4	97.5% Chebyshev (MVUE) UCL	9.2061E-4
95% Modified-t UCL	8.9953E-4	99% Chebyshev (MVUE) UCL	0.0011
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.68	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.8993E-4		
nu star	161.2		
Approximate Chi Square Value (.05)	132.9	Nonparametric Statistics	
Adjusted Level of Significance	0.045	95% CLT UCL	8.7798E-4
Adjusted Chi Square Value	132.1	95% Jackknife UCL	8.8247E-4
		95% Standard Bootstrap UCL	8.7005E-4
Anderson-Darling Test Statistic	7.505	95% Bootstrap-t UCL	0.0011
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	0.0016
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	8.8796E-4
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL	0.0010
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0012
		97.5% Chebyshev(Mean, Sd) UCL	0.0015
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.002
95% Approximate Gamma UCL	7.9468E-4		
95% Adjusted Gamma UCL	7.9947E-4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0012

Result or 1/2 SDL (vanadium)

General Statistics

Number of Valid Samples	48	Number of Unique Samples	39
Raw Statistics		Log-transformed Statistics	
Minimum	9.02	Minimum of Log Data	2.199
Maximum	32	Maximum of Log Data	3.466
Mean	21.65	Mean of log Data	3.05
Median	21.75	SD of log Data	0.233
SD	4.554		
Coefficient of Variation	0.21		
Skewness	-0.279		

Relevant UCL Statistics

Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.985		Shapiro Wilk Test Statistic		0.933	
Shapiro Wilk Critical Value		0.947		Shapiro Wilk Critical Value		0.947	
Data appear Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		22.75		95% H-UCL		23.03	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		24.91	
95% Adjusted-CLT UCL		22.7		97.5% Chebyshev (MVUE) UCL		26.31	
95% Modified-t UCL		22.74		99% Chebyshev (MVUE) UCL		29.05	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		19.24		Data appear Normal at 5% Significance Level			
Theta Star		1.125					
nu star		1847					
Approximate Chi Square Value (.05)		1748		Nonparametric Statistics			
Adjusted Level of Significance		0.045		95% CLT UCL		22.73	
Adjusted Chi Square Value		1745		95% Jackknife UCL		22.75	
				95% Standard Bootstrap UCL		22.71	
Anderson-Darling Test Statistic		0.627		95% Bootstrap-t UCL		22.7	
Anderson-Darling 5% Critical Value		0.748		95% Hall's Bootstrap UCL		22.7	
Kolmogorov-Smirnov Test Statistic		0.102		95% Percentile Bootstrap UCL		22.73	
Kolmogorov-Smirnov 5% Critical Value		0.128		95% BCA Bootstrap UCL		22.76	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		24.51	
				97.5% Chebyshev(Mean, Sd) UCL		25.75	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		28.19	
95% Approximate Gamma UCL		22.87					
95% Adjusted Gamma UCL		22.91					
Potential UCL to Use				Use 95% Student's-t UCL		22.75	

Result or 1/2 SDL (zinc)

General Statistics			
Number of Valid Samples		53	Number of Unique Samples
			53
Raw Statistics		Log-transformed Statistics	
Minimum	31.5	Minimum of Log Data	3.45
Maximum	903	Maximum of Log Data	6.806
Mean	139.1	Mean of log Data	4.558
Median	84.3	SD of log Data	0.795
SD	160.9		
Coefficient of Variation	1.157		
Skewness	2.989		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic		Lilliefors Test Statistic	0.133
Lilliefors Critical Value		Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	176.1	95% H-UCL	165.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	199.2
95% Adjusted-CLT UCL	185.2	97.5% Chebyshev (MVUE) UCL	229.1
95% Modified-t UCL	177.6	99% Chebyshev (MVUE) UCL	288
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.4	Data do not follow a Discernable Distribution (0.05)	
Theta Star	99.32		
nu star	148.4		
Approximate Chi Square Value (.05)	121.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0455	95% CLT UCL	175.5
Adjusted Chi Square Value	120.6	95% Jackknife UCL	176.1
		95% Standard Bootstrap UCL	175
Anderson-Darling Test Statistic	2.607	95% Bootstrap-t UCL	193.4
Anderson-Darling 5% Critical Value	0.768	95% Hall's Bootstrap UCL	198.1
Kolmogorov-Smirnov Test Statistic	0.185	95% Percentile Bootstrap UCL	178.3
Kolmogorov-Smirnov 5% Critical Value	0.124	95% BCA Bootstrap UCL	187.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	235.5
		97.5% Chebyshev(Mean, Sd) UCL	277.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	359
95% Approximate Gamma UCL	170.2		
95% Adjusted Gamma UCL	171.2		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	235.5

APPENDIX A-9

POND SEDIMENT

General UCL Statistics for Full Data Sets													
User Selected Options													
From File		J:\1352 - Gulfco R\risk\eco\draft for PRP review\Appendices\Data\Pond sediment data.wst											
Full Precision		OFF											
Confidence Coefficient		95%											
Number of Bootstrap Operations		2000											
Result or 1/2 SDL (2,4,6-trichlorophenol)													
General Statistics													
Number of Valid Samples				8		Number of Unique Samples				7			
Raw Statistics						Log-transformed Statistics							
		Minimum	0.0125				Minimum of Log Data	-4.382					
		Maximum	0.0429				Maximum of Log Data	-3.149					
		Mean	0.0175				Mean of log Data	-4.145					
		Median	0.0135				SD of log Data	0.414					
		SD	0.0104										
		Coefficient of Variation	0.595										
		Skewness	2.728										
Relevant UCL Statistics													
Normal Distribution Test						Lognormal Distribution Test							
		Shapiro Wilk Test Statistic	0.534				Shapiro Wilk Test Statistic	0.62					
		Shapiro Wilk Critical Value	0.818				Shapiro Wilk Critical Value	0.818					
Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level							
Assuming Normal Distribution						Assuming Lognormal Distribution							
		95% Student's-t UCL	0.0244				95% H-UCL	0.0245					
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL						0.028	
		95% Adjusted-CLT UCL	0.0273				97.5% Chebyshev (MVUE) UCL	0.0328					
		95% Modified-t UCL	0.025				99% Chebyshev (MVUE) UCL	0.0421					
Gamma Distribution Test						Data Distribution							
		k star (bias corrected)	3.43				Data do not follow a Discernable Distribution (0.05)						
		Theta Star	0.0050										
		nu star	54.87										
Approximate Chi Square Value (.05)						Nonparametric Statistics							
		Adjusted Level of Significance	0.0195				95% CLT UCL		0.0235				
		Adjusted Chi Square Value	35.47				95% Jackknife UCL		0.0244				
							95% Standard Bootstrap UCL		0.0231				
		Anderson-Darling Test Statistic	1.566				95% Bootstrap-t UCL		0.064				
		Anderson-Darling 5% Critical Value	0.719				95% Hall's Bootstrap UCL		0.0513				
		Kolmogorov-Smirnov Test Statistic	0.368				95% Percentile Bootstrap UCL		0.0244				
		Kolmogorov-Smirnov 5% Critical Value	0.295				95% BCA Bootstrap UCL		0.0254				
Data not Gamma Distributed at 5% Significance Level								95% Chebyshev(Mean, Sd) UCL		0.0334			
								97.5% Chebyshev(Mean, Sd) UCL		0.0404			
Assuming Gamma Distribution								99% Chebyshev(Mean, Sd) UCL		0.054			
		95% Approximate Gamma UCL	0.0246										
		95% Adjusted Gamma UCL	0.027										

Potential UCL to Use		Use 95% Student's-t UCL	0.0244
		or 95% Modified-t UCL	0.025
Result or 1/2 SDL (4,4'-ddd)			
General Statistics			
Number of Valid Samples	8	Number of Unique Samples	7
Raw Statistics		Log-transformed Statistics	
Minimum	2.2750E-4	Minimum of Log Data	-8.388
Maximum	0.013	Maximum of Log Data	-4.343
Mean	0.0069	Mean of log Data	-5.828
Median	0.01	SD of log Data	1.831
SD	0.0055		
Coefficient of Variation	0.794		
Skewness	-0.527		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.772	Shapiro Wilk Test Statistic	0.727
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0107	95% H-UCL	0.873
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0401
95% Adjusted-CLT UCL	0.0097	97.5% Chebyshev (MVUE) UCL	0.0529
95% Modified-t UCL	0.0106	99% Chebyshev (MVUE) UCL	0.0779
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.522	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0133		
nu star	8.359		
Approximate Chi Square Value (.05)	2.945	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0102
Adjusted Chi Square Value	2.195	95% Jackknife UCL	0.0107
		95% Standard Bootstrap UCL	0.0099
Anderson-Darling Test Statistic	1.169	95% Bootstrap-t UCL	0.0101
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	0.0092
Kolmogorov-Smirnov Test Statistic	0.388	95% Percentile Bootstrap UCL	0.0098
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0097
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0155
		97.5% Chebyshev(Mean, Sd) UCL	0.0192
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0264
95% Approximate Gamma UCL	0.0197		
95% Adjusted Gamma UCL	0.0265		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0264
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (4,4'-ddt)			
General Statistics			
Number of Valid Samples	8	Number of Unique Samples	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.0011	Minimum of Log Data	-6.803
Maximum	0.007	Maximum of Log Data	-4.962
Mean	0.0041	Mean of log Data	-5.717
Median	0.0055	SD of log Data	0.81
SD	0.0024		
Coefficient of Variation	0.588		
Skewness	-0.488		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.798	Shapiro Wilk Test Statistic	0.754
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0058	95% H-UCL	0.0116
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0098
95% Adjusted-CLT UCL	0.0054	97.5% Chebyshev (MVUE) UCL	0.0123
95% Modified-t UCL	0.0057	99% Chebyshev (MVUE) UCL	0.017
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.507	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0027		
nu star	24.12		
Approximate Chi Square Value (.05)	13.94	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0055
Adjusted Chi Square Value	12.03	95% Jackknife UCL	0.0058
		95% Standard Bootstrap UCL	0.0054
Anderson-Darling Test Statistic	1.03	95% Bootstrap-t UCL	0.0056
Anderson-Darling 5% Critical Value	0.723	95% Hall's Bootstrap UCL	0.0052
Kolmogorov-Smirnov Test Statistic	0.37	95% Percentile Bootstrap UCL	0.0054
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	0.0053
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0079
		97.5% Chebyshev(Mean, Sd) UCL	0.0095
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0128
95% Approximate Gamma UCL	0.0072		
95% Adjusted Gamma UCL	0.0083		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0079
Recommended UCL exceeds the maximum observation			
Result or 1/2 SDL (acetone)			
General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8

Raw Statistics				Log-transformed Statistics			
	Minimum	3.2850E-4			Minimum of Log Data	-8.021	
	Maximum	0.0798			Maximum of Log Data	-2.528	
	Mean	0.0238			Mean of log Data	-4.85	
	Median	0.0213			SD of log Data	2.123	
	SD	0.0264					
	Coefficient of Variation	1.11					
	Skewness	1.474					

Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
	Shapiro Wilk Test Statistic	0.845			Shapiro Wilk Test Statistic	0.849	
	Shapiro Wilk Critical Value	0.818			Shapiro Wilk Critical Value	0.818	
Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
	95% Student's-t UCL	0.0415			95% H-UCL	15.5	
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL	0.17	
	95% Adjusted-CLT UCL	0.0444			97.5% Chebyshev (MVUE) UCL	0.226	
	95% Modified-t UCL	0.0423			99% Chebyshev (MVUE) UCL	0.335	
Gamma Distribution Test				Data Distribution			
	k star (bias corrected)	0.434		Data appear Normal at 5% Significance Level			
	Theta Star	0.0549					
	nu star	6.942					
	Approximate Chi Square Value (.05)	2.139		Nonparametric Statistics			
	Adjusted Level of Significance	0.0195			95% CLT UCL	0.0392	
	Adjusted Chi Square Value	1.53			95% Jackknife UCL	0.0415	
					95% Standard Bootstrap UCL	0.0381	
	Anderson-Darling Test Statistic	0.394			95% Bootstrap-t UCL	0.0495	
	Anderson-Darling 5% Critical Value	0.758			95% Hall's Bootstrap UCL	0.108	
	Kolmogorov-Smirnov Test Statistic	0.201			95% Percentile Bootstrap UCL	0.0394	
	Kolmogorov-Smirnov 5% Critical Value	0.308			95% BCA Bootstrap UCL	0.0428	
Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL	0.0645	
					97.5% Chebyshev(Mean, Sd) UCL	0.0822	
					99% Chebyshev(Mean, Sd) UCL	0.117	
Assuming Gamma Distribution							
	95% Approximate Gamma UCL	0.0773					
	95% Adjusted Gamma UCL	0.108					
Potential UCL to Use					Use 95% Student's-t UCL	0.0415	

Result or 1/2 SDL (aluminum)

General Statistics							
	Number of Valid Samples	8			Number of Unique Samples	8	
Raw Statistics				Log-transformed Statistics			
	Minimum	7990			Minimum of Log Data	8.986	
	Maximum	16300			Maximum of Log Data	9.699	
	Mean	11748			Mean of log Data	9.334	

Median	11550	SD of log Data	0.293
SD	3382		
Coefficient of Variation	0.288		
Skewness	0.211		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.892	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14013	95% H-UCL	14847
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17068
95% Adjusted-CLT UCL	13810	97.5% Chebyshev (MVUE) UCL	19369
95% Modified-t UCL	14028	99% Chebyshev (MVUE) UCL	23889
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.618	Data appear Normal at 5% Significance Level	
Theta Star	1363		
nu star	137.9		
Approximate Chi Square Value (.05)	111.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	13714
Adjusted Chi Square Value	105.8	95% Jackknife UCL	14013
		95% Standard Bootstrap UCL	13557
Anderson-Darling Test Statistic	0.421	95% Bootstrap-t UCL	14142
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	13477
Kolmogorov-Smirnov Test Statistic	0.224	95% Percentile Bootstrap UCL	13574
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	13561
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16959
		97.5% Chebyshev(Mean, Sd) UCL	19214
		99% Chebyshev(Mean, Sd) UCL	23644
Assuming Gamma Distribution			
95% Approximate Gamma UCL	14494		
95% Adjusted Gamma UCL	15310		
Potential UCL to Use		Use 95% Student's-t UCL	14013

Result or 1/2 SDL (antimony)

General Statistics

Number of Valid Samples		8	Number of Unique Samples		7
Raw Statistics			Log-transformed Statistics		
Minimum	0.33		Minimum of Log Data	-1.109	
Maximum	1.85		Maximum of Log Data	0.615	
Mean	0.795		Mean of log Data	-0.487	
Median	0.4		SD of log Data	0.75	
SD	0.618				
Coefficient of Variation	0.778				
Skewness	0.887				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk Test Statistic	0.765
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.209	95% H-UCL	1.849
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.7
95% Adjusted-CLT UCL	1.228	97.5% Chebyshev (MVUE) UCL	2.098
95% Modified-t UCL	1.221	99% Chebyshev (MVUE) UCL	2.879
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.392	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.571		
nu star	22.27		
Approximate Chi Square Value (.05)	12.54	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	1.154
Adjusted Chi Square Value	10.74	95% Jackknife UCL	1.209
		95% Standard Bootstrap UCL	1.128
Anderson-Darling Test Statistic	1.02	95% Bootstrap-t UCL	1.349
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	1.025
Kolmogorov-Smirnov Test Statistic	0.33	95% Percentile Bootstrap UCL	1.158
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	1.173
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.748
		97.5% Chebyshev(Mean, Sd) UCL	2.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.97
95% Approximate Gamma UCL	1.412		
95% Adjusted Gamma UCL	1.648		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1.748

Result or 1/2 SDL (arsenic)

General Statistics			
Number of Valid Samples		8	
		Number of Unique Samples	
		7	
Raw Statistics		Log-transformed Statistics	
Minimum	0.14	Minimum of Log Data	-1.966
Maximum	5.01	Maximum of Log Data	1.611
Mean	1.735	Mean of log Data	-0.633
Median	0.168	SD of log Data	1.74
SD	2.233		
Coefficient of Variation	1.287		
Skewness	0.794		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.706	Shapiro Wilk Test Statistic	0.695
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		3.231		95% H-UCL		92.47	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		6.274	
95% Adjusted-CLT UCL		3.27		97.5% Chebyshev (MVUE) UCL		8.245	
95% Modified-t UCL		3.268		99% Chebyshev (MVUE) UCL		12.12	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		0.415		Data do not follow a Discernable Distribution (0.05)			
Theta Star		4.176					
nu star		6.648					
Approximate Chi Square Value (.05)		1.979		Nonparametric Statistics			
Adjusted Level of Significance		0.0195		95% CLT UCL		3.034	
Adjusted Chi Square Value		1.401		95% Jackknife UCL		3.231	
				95% Standard Bootstrap UCL		2.918	
Anderson-Darling Test Statistic		1.258		95% Bootstrap-t UCL		4.026	
Anderson-Darling 5% Critical Value		0.76		95% Hall's Bootstrap UCL		2.692	
Kolmogorov-Smirnov Test Statistic		0.385		95% Percentile Bootstrap UCL		2.917	
Kolmogorov-Smirnov 5% Critical Value		0.308		95% BCA Bootstrap UCL		3.081	
Data not Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		5.176	
				97.5% Chebyshev(Mean, Sd) UCL		6.665	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		9.59	
95% Approximate Gamma UCL		5.827					
95% Adjusted Gamma UCL		8.231					
Potential UCL to Use				Use 99% Chebyshev (Mean, Sd) UCL		9.59	
Recommended UCL exceeds the maximum observation							
Result or 1/2 SDL (barium)							
General Statistics							
Number of Valid Samples		8		Number of Unique Samples		7	
Raw Statistics				Log-transformed Statistics			
Minimum		108		Minimum of Log Data		4.682	
Maximum		417		Maximum of Log Data		6.033	
Mean		198.6		Mean of log Data		5.149	
Median		128.5		SD of log Data		0.553	
SD		119.4					
Coefficient of Variation		0.601					
Skewness		1.058					
Relevant UCL Statistics							
Normal Distribution Test				Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.787		Shapiro Wilk Test Statistic		0.803	
Shapiro Wilk Critical Value		0.818		Shapiro Wilk Critical Value		0.818	
Data not Normal at 5% Significance Level				Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		278.6		95% H-UCL		337.2	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL		366.1	

95% Adjusted-CLT UCL	284.9	97.5% Chebyshev (MVUE) UCL	439.5
95% Modified-t UCL	281.2	99% Chebyshev (MVUE) UCL	583.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.374	Data do not follow a Discernable Distribution (0.05)	
Theta Star	83.68		
nu star	37.98		
Approximate Chi Square Value (.05)	24.87	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	268
Adjusted Chi Square Value	22.22	95% Jackknife UCL	278.6
		95% Standard Bootstrap UCL	262.5
Anderson-Darling Test Statistic	0.846	95% Bootstrap-t UCL	326.6
Anderson-Darling 5% Critical Value	0.72	95% Hall's Bootstrap UCL	250.9
Kolmogorov-Smirnov Test Statistic	0.3	95% Percentile Bootstrap UCL	263.6
Kolmogorov-Smirnov 5% Critical Value	0.296	95% BCA Bootstrap UCL	275.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	382.6
		97.5% Chebyshev(Mean, Sd) UCL	462.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	618.5
95% Approximate Gamma UCL	303.4		
95% Adjusted Gamma UCL	339.5		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	382.6

Result or 1/2 SDL (benzo(b)fluoranthene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.005	Minimum of Log Data	-5.298
Maximum	0.106	Maximum of Log Data	-2.244
Mean	0.0477	Mean of log Data	-3.502
Median	0.0338	SD of log Data	1.186
SD	0.0385		
Coefficient of Variation	0.808		
Skewness	0.434		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.857
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0735	95% H-UCL	0.364
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.154
95% Adjusted-CLT UCL	0.0723	97.5% Chebyshev (MVUE) UCL	0.197
95% Modified-t UCL	0.0738	99% Chebyshev (MVUE) UCL	0.282
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.853	Data appear Normal at 5% Significance Level	

Theta Star	0.0559		
nu star	13.65		
Approximate Chi Square Value (.05)	6.332	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0701
Adjusted Chi Square Value	5.127	95% Jackknife UCL	0.0735
		95% Standard Bootstrap UCL	0.0679
Anderson-Darling Test Statistic	0.442	95% Bootstrap-t UCL	0.0754
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	0.0672
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	0.069
Kolmogorov-Smirnov 5% Critical Value	0.3	95% BCA Bootstrap UCL	0.0698
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.107
		97.5% Chebyshev(Mean, Sd) UCL	0.133
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.183
95% Approximate Gamma UCL	0.103		
95% Adjusted Gamma UCL	0.127		
Potential UCL to Use		Use 95% Student's-t UCL	0.0735

Result or 1/2 SDL (benzo(g,h,i)perylene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.0075	Minimum of Log Data	-4.893
Maximum	0.135	Maximum of Log Data	-2.002
Mean	0.024	Mean of log Data	-4.466
Median	0.0079	SD of log Data	1
SD	0.0449		
Coefficient of Variation	1.871		
Skewness	2.826		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.433	Shapiro Wilk Test Statistic	0.495
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.054	95% H-UCL	0.0711
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0449
95% Adjusted-CLT UCL	0.067	97.5% Chebyshev (MVUE) UCL	0.0568
95% Modified-t UCL	0.0567	99% Chebyshev (MVUE) UCL	0.0802
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.587	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0408		
nu star	9.393		
Approximate Chi Square Value (.05)	3.566	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0501
Adjusted Chi Square Value	2.719	95% Jackknife UCL	0.054

		95% Standard Bootstrap UCL		0.0478
Anderson-Darling Test Statistic	2.272	95% Bootstrap-t UCL		2.081
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL		0.889
Kolmogorov-Smirnov Test Statistic	0.49	95% Percentile Bootstrap UCL		0.0555
Kolmogorov-Smirnov 5% Critical Value	0.303	95% BCA Bootstrap UCL		0.0716
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0931
		97.5% Chebyshev(Mean, Sd) UCL		0.123
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.182
95% Approximate Gamma UCL	0.0632			
95% Adjusted Gamma UCL	0.0828			
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL		0.182
Recommended UCL exceeds the maximum observation				
Result or 1/2 SDL (benzo(k)fluoranthene)				
General Statistics				
Number of Valid Samples	8	Number of Unique Samples	7	
Raw Statistics		Log-transformed Statistics		
Minimum	0.0115	Minimum of Log Data	-4.465	
Maximum	0.13	Maximum of Log Data	-2.04	
Mean	0.0527	Mean of log Data	-3.539	
Median	0.0138	SD of log Data	1.174	
SD	0.0557			
Coefficient of Variation	1.058			
Skewness	0.678			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.695	Shapiro Wilk Test Statistic	0.702	
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818	
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	0.09	95% H-UCL	0.335	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.146	
95% Adjusted-CLT UCL	0.0901	97.5% Chebyshev (MVUE) UCL	0.187	
95% Modified-t UCL	0.0908	99% Chebyshev (MVUE) UCL	0.267	
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.691	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0762			
nu star	11.06			
Approximate Chi Square Value (.05)	4.613	Nonparametric Statistics		
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0851	
Adjusted Chi Square Value	3.619	95% Jackknife UCL	0.09	
		95% Standard Bootstrap UCL	0.0828	
Anderson-Darling Test Statistic	1.28	95% Bootstrap-t UCL	0.0975	
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	0.071	
Kolmogorov-Smirnov Test Statistic	0.371	95% Percentile Bootstrap UCL	0.082	

Kolmogorov-Smirnov 5% Critical Value		0.302	95% BCA Bootstrap UCL		0.0834
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		0.139
			97.5% Chebyshev(Mean, Sd) UCL		0.176
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		0.249
95% Approximate Gamma UCL		0.126			
95% Adjusted Gamma UCL		0.161			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL		0.249
Recommended UCL exceeds the maximum observation					
Result or 1/2 SDL (beryllium)					
General Statistics					
Number of Valid Samples		8	Number of Unique Samples		8
Raw Statistics			Log-transformed Statistics		
Minimum		0.58	Minimum of Log Data		-0.545
Maximum		1.13	Maximum of Log Data		0.122
Mean		0.834	Mean of log Data		-0.209
Median		0.865	SD of log Data		0.254
SD		0.206			
Coefficient of Variation		0.247			
Skewness		0.0408			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.926	Shapiro Wilk Test Statistic		0.916
Shapiro Wilk Critical Value		0.818	Shapiro Wilk Critical Value		0.818
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
95% Student's-t UCL		0.972	95% H-UCL		1.016
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		1.161
95% Adjusted-CLT UCL		0.954	97.5% Chebyshev (MVUE) UCL		1.303
95% Modified-t UCL		0.972	99% Chebyshev (MVUE) UCL		1.581
Gamma Distribution Test			Data Distribution		
k star (bias corrected)		11.5	Data appear Normal at 5% Significance Level		
Theta Star		0.0725			
nu star		183.9			
Approximate Chi Square Value (.05)		153.6	Nonparametric Statistics		
Adjusted Level of Significance		0.0195	95% CLT UCL		0.953
Adjusted Chi Square Value		146.5	95% Jackknife UCL		0.972
			95% Standard Bootstrap UCL		0.944
Anderson-Darling Test Statistic		0.371	95% Bootstrap-t UCL		0.963
Anderson-Darling 5% Critical Value		0.716	95% Hall's Bootstrap UCL		0.934
Kolmogorov-Smirnov Test Statistic		0.21	95% Percentile Bootstrap UCL		0.945
Kolmogorov-Smirnov 5% Critical Value		0.294	95% BCA Bootstrap UCL		0.939
Data appear Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		1.151
			97.5% Chebyshev(Mean, Sd) UCL		1.288
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1.557

95% Approximate Gamma UCL		0.999		
95% Adjusted Gamma UCL		1.047		
Potential UCL to Use			Use 95% Student's-t UCL	0.972
Result or 1/2 SDL (beta-bhc)				
General Statistics				
Number of Valid Samples		8	Number of Unique Samples 7	
Raw Statistics			Log-transformed Statistics	
Minimum	2.4400E-4		Minimum of Log Data	-8.318
Maximum	0.015		Maximum of Log Data	-4.2
Mean	0.0079		Mean of log Data	-5.721
Median	0.0115		SD of log Data	1.87
SD	0.0063			
Coefficient of Variation	0.799			
Skewness	-0.521			
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.771		Shapiro Wilk Test Statistic	0.725
Shapiro Wilk Critical Value	0.818		Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0122		95% H-UCL	1.231
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0475
95% Adjusted-CLT UCL	0.0112		97.5% Chebyshev (MVUE) UCL	0.0626
95% Modified-t UCL	0.0122		99% Chebyshev (MVUE) UCL	0.0924
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.51		Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0156			
nu star	8.162			
Approximate Chi Square Value (.05)	2.829		Nonparametric Statistics	
Adjusted Level of Significance	0.0195		95% CLT UCL	0.0117
Adjusted Chi Square Value	2.098		95% Jackknife UCL	0.0122
			95% Standard Bootstrap UCL	0.0114
Anderson-Darling Test Statistic	1.185		95% Bootstrap-t UCL	0.0116
Anderson-Darling 5% Critical Value	0.75		95% Hall's Bootstrap UCL	0.0107
Kolmogorov-Smirnov Test Statistic	0.39		95% Percentile Bootstrap UCL	0.0113
Kolmogorov-Smirnov 5% Critical Value	0.305		95% BCA Bootstrap UCL	0.0112
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0178
			97.5% Chebyshev(Mean, Sd) UCL	0.022
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.0303
95% Approximate Gamma UCL	0.023			
95% Adjusted Gamma UCL	0.031			
Potential UCL to Use			Use 99% Chebyshev (Mean, Sd) UCL	0.0303
Recommended UCL exceeds the maximum observation				

Result or 1/2 SDL (boron)			
General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	4.26	Minimum of Log Data	1.449
Maximum	28.4	Maximum of Log Data	3.346
Mean	14.95	Mean of log Data	2.439
Median	12.4	SD of log Data	0.817
SD	10.5		
Coefficient of Variation	0.702		
Skewness	0.337		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	21.98	95% H-UCL	40.99
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	
95% Adjusted-CLT UCL	21.53	97.5% Chebyshev (MVUE) UCL	43.18
95% Modified-t UCL	22.06	99% Chebyshev (MVUE) UCL	59.77
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.355	Data appear Normal at 5% Significance Level	
Theta Star	11.03		
nu star	21.69		
Approximate Chi Square Value (.05)	12.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.06
Adjusted Chi Square Value	10.34	95% Jackknife UCL	21.98
		95% Standard Bootstrap UCL	20.6
Anderson-Darling Test Statistic	0.562	95% Bootstrap-t UCL	22.63
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	19.35
Kolmogorov-Smirnov Test Statistic	0.236	95% Percentile Bootstrap UCL	20.79
Kolmogorov-Smirnov 5% Critical Value	0.297	95% BCA Bootstrap UCL	20.78
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	31.13
		97.5% Chebyshev(Mean, Sd) UCL	38.13
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	51.87
95% Approximate Gamma UCL	26.79		
95% Adjusted Gamma UCL	31.36		
Potential UCL to Use		Use 95% Student's-t UCL	21.98
Result or 1/2 SDL (bromomethane)			
General Statistics			

Number of Valid Samples				8	Number of Unique Samples				8
Raw Statistics					Log-transformed Statistics				
	Minimum	0.0013				Minimum of Log Data	-6.63		
	Maximum	0.031				Maximum of Log Data	-3.474		
	Mean	0.0089				Mean of log Data	-5.269		
	Median	0.0067				SD of log Data	1.168		
	SD	0.0099							
	Coefficient of Variation	1.115							
	Skewness	1.87							
Relevant UCL Statistics									
Normal Distribution Test					Lognormal Distribution Test				
	Shapiro Wilk Test Statistic	0.777				Shapiro Wilk Test Statistic	0.9		
	Shapiro Wilk Critical Value	0.818				Shapiro Wilk Critical Value	0.818		
Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level				
Assuming Normal Distribution					Assuming Lognormal Distribution				
	95% Student's-t UCL	0.0156				95% H-UCL	0.058		
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	0.0256		
	95% Adjusted-CLT UCL	0.0172				97.5% Chebyshev (MVUE) UCL	0.0328		
	95% Modified-t UCL	0.016				99% Chebyshev (MVUE) UCL	0.0469		
Gamma Distribution Test					Data Distribution				
	k star (bias corrected)	0.737			Data appear Gamma Distributed at 5% Significance Level				
	Theta Star	0.0121							
	nu star	11.79							
	Approximate Chi Square Value (.05)	5.091			Nonparametric Statistics				
	Adjusted Level of Significance	0.0195				95% CLT UCL	0.0147		
	Adjusted Chi Square Value	4.035				95% Jackknife UCL	0.0156		
						95% Standard Bootstrap UCL	0.0142		
	Anderson-Darling Test Statistic	0.406				95% Bootstrap-t UCL	0.0234		
	Anderson-Darling 5% Critical Value	0.735				95% Hall's Bootstrap UCL	0.0427		
	Kolmogorov-Smirnov Test Statistic	0.226				95% Percentile Bootstrap UCL	0.0148		
	Kolmogorov-Smirnov 5% Critical Value	0.301				95% BCA Bootstrap UCL	0.0166		
Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	0.0242		
						97.5% Chebyshev(Mean, Sd) UCL	0.0309		
Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL	0.0439		
	95% Approximate Gamma UCL	0.0206							
	95% Adjusted Gamma UCL	0.0261							
Potential UCL to Use					Use 95% Approximate Gamma UCL				

Result or 1/2 SDL (cadmium)

General Statistics									
Number of Valid Samples				8	Number of Unique Samples				7
Raw Statistics					Log-transformed Statistics				
	Minimum	0.015				Minimum of Log Data	-4.2		
	Maximum	0.27				Maximum of Log Data	-1.309		

Mean	0.147	Mean of log Data	-2.491
Median	0.19	SD of log Data	1.377
SD	0.112		
Coefficient of Variation	0.762		
Skewness	-0.424		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk Test Statistic	0.716
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.222	95% H-UCL	2.239
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.561
95% Adjusted-CLT UCL	0.206	97.5% Chebyshev (MVUE) UCL	0.727
95% Modified-t UCL	0.221	99% Chebyshev (MVUE) UCL	1.052
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.711	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.207		
nu star	11.37		
Approximate Chi Square Value (.05)	4.814	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.212
Adjusted Chi Square Value	3.794	95% Jackknife UCL	0.222
		95% Standard Bootstrap UCL	0.207
Anderson-Darling Test Statistic	1.11	95% Bootstrap-t UCL	0.211
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	0.195
Kolmogorov-Smirnov Test Statistic	0.35	95% Percentile Bootstrap UCL	0.208
Kolmogorov-Smirnov 5% Critical Value	0.301	95% BCA Bootstrap UCL	0.206
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.32
		97.5% Chebyshev(Mean, Sd) UCL	0.395
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.541
95% Approximate Gamma UCL	0.348		
95% Adjusted Gamma UCL	0.441		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.541
Recommended UCL exceeds the maximum observation			

Result or 1/2 SDL (carbon disulfide)

General Statistics

Number of Valid Samples		8	Number of Unique Samples		8
Raw Statistics			Log-transformed Statistics		
Minimum	9.5500E-5		Minimum of Log Data	-9.256	
Maximum	0.0077		Maximum of Log Data	-4.865	
Mean	0.0013		Mean of log Data	-7.554	
Median	4.8175E-4		SD of log Data	1.364	
SD	0.0025				
Coefficient of Variation	1.875				

				Skewness	2.757							
Relevant UCL Statistics												
Normal Distribution Test					Lognormal Distribution Test							
Shapiro Wilk Test Statistic				0.522	Shapiro Wilk Test Statistic				0.892			
Shapiro Wilk Critical Value				0.818	Shapiro Wilk Critical Value				0.818			
Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
Assuming Normal Distribution					Assuming Lognormal Distribution							
95% Student's-t UCL				0.0031	95% H-UCL				0.0134			
95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL				0.0034			
95% Adjusted-CLT UCL				0.0038	97.5% Chebyshev (MVUE) UCL				0.0045			
95% Modified-t UCL				0.0032	99% Chebyshev (MVUE) UCL				0.0065			
Gamma Distribution Test					Data Distribution							
k star (bias corrected)				0.48	Data Follow Appr. Gamma Distribution at 5% Significance Level							
Theta Star				0.0028								
nu star				7.688								
Approximate Chi Square Value (.05)				2.555	Nonparametric Statistics							
Adjusted Level of Significance				0.0195	95% CLT UCL				0.0028			
Adjusted Chi Square Value				1.871	95% Jackknife UCL				0.0031			
					95% Standard Bootstrap UCL				0.0027			
Anderson-Darling Test Statistic				0.892	95% Bootstrap-t UCL				0.0142			
Anderson-Darling 5% Critical Value				0.753	95% Hall's Bootstrap UCL				0.0134			
Kolmogorov-Smirnov Test Statistic				0.298	95% Percentile Bootstrap UCL				0.0031			
Kolmogorov-Smirnov 5% Critical Value				0.306	95% BCA Bootstrap UCL				0.0033			
Data follow Appr. Gamma Distribution at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL				0.0053			
					97.5% Chebyshev(Mean, Sd) UCL				0.0070			
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL				0.0104			
95% Approximate Gamma UCL				0.0041								
95% Adjusted Gamma UCL				0.0056								
Potential UCL to Use					Use 95% Approximate Gamma UCL				0.0041			

General Statistics					
Number of Valid Samples		8	Number of Unique Samples		8
Raw Statistics			Log-transformed Statistics		
Minimum		8.29	Minimum of Log Data		2.115
Maximum		20.1	Maximum of Log Data		3.001
Mean		12.93	Mean of log Data		2.505
Median		11.55	SD of log Data		0.35
SD		4.611			
Coefficient of Variation		0.357			
Skewness		0.57			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic		0.881	Shapiro Wilk Test Statistic		0.895

Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.02	95% H-UCL	17.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.93
95% Adjusted-CLT UCL	15.97	97.5% Chebyshev (MVUE) UCL	22.96
95% Modified-t UCL	16.08	99% Chebyshev (MVUE) UCL	28.91
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.937	Data appear Normal at 5% Significance Level	
Theta Star	2.178		
nu star	94.99		
Approximate Chi Square Value (.05)	73.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	15.61
Adjusted Chi Square Value	68.75	95% Jackknife UCL	16.02
		95% Standard Bootstrap UCL	15.41
Anderson-Darling Test Statistic	0.448	95% Bootstrap-t UCL	16.66
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	15.32
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	15.5
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	15.63
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.04
		97.5% Chebyshev(Mean, Sd) UCL	23.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	29.15
95% Approximate Gamma UCL	16.71		
95% Adjusted Gamma UCL	17.87		
Potential UCL to Use		Use 95% Student's-t UCL	16.02

Result or 1/2 SDL (chrysene)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.0065	Minimum of Log Data	-5.036
Maximum	0.0257	Maximum of Log Data	-3.661
Mean	0.0094	Mean of log Data	-4.785
Median	0.007	SD of log Data	0.462
SD	0.0065		
Coefficient of Variation	0.697		
Skewness	2.777		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.501	Shapiro Wilk Test Statistic	0.577
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0139	95% H-UCL	0.0139

95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL		0.0157
95% Adjusted-CLT UCL	0.0157	97.5% Chebyshev (MVUE) UCL		0.0186
95% Modified-t UCL	0.0143	99% Chebyshev (MVUE) UCL		0.0242
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	2.693	Data do not follow a Discernable Distribution (0.05)		
Theta Star	0.0035			
nu star	43.09			
Approximate Chi Square Value (.05)	29.04	Nonparametric Statistics		
Adjusted Level of Significance	0.0195	95% CLT UCL		0.0133
Adjusted Chi Square Value	26.16	95% Jackknife UCL		0.0139
		95% Standard Bootstrap UCL		0.013
Anderson-Darling Test Statistic	1.788	95% Bootstrap-t UCL		0.0588
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL		0.037
Kolmogorov-Smirnov Test Statistic	0.395	95% Percentile Bootstrap UCL		0.014
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL		0.0144
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL		0.0196
		97.5% Chebyshev(Mean, Sd) UCL		0.024
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL		0.0327
95% Approximate Gamma UCL	0.014			
95% Adjusted Gamma UCL	0.0156			
Potential UCL to Use		Use 95% Student's-t UCL		0.0139
		or 95% Modified-t UCL		0.0143
Result or 1/2 SDL (cobalt)				
General Statistics				
Number of Valid Samples	8	Number of Unique Samples	8	
Raw Statistics		Log-transformed Statistics		
Minimum	5.19	Minimum of Log Data	1.647	
Maximum	8.99	Maximum of Log Data	2.196	
Mean	6.939	Mean of log Data	1.92	
Median	6.945	SD of log Data	0.2	
SD	1.378			
Coefficient of Variation	0.199			
Skewness	0.167			
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Test Statistic	0.945	
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818	
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution		Assuming Lognormal Distribution		
95% Student's-t UCL	7.862	95% H-UCL	8.067	
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.086	
95% Adjusted-CLT UCL	7.771	97.5% Chebyshev (MVUE) UCL	10.02	
95% Modified-t UCL	7.866	99% Chebyshev (MVUE) UCL	11.84	

Gamma Distribution Test				Data Distribution			
k star (bias corrected)		18.1	Data appear Normal at 5% Significance Level				
Theta Star		0.383					
nu star		289.5					
Approximate Chi Square Value (.05)		251.1	Nonparametric Statistics				
Adjusted Level of Significance		0.0195			95% CLT UCL	7.74	
Adjusted Chi Square Value		242			95% Jackknife UCL	7.862	
					95% Standard Bootstrap UCL	7.683	
Anderson-Darling Test Statistic		0.268			95% Bootstrap-t UCL	7.852	
Anderson-Darling 5% Critical Value		0.716			95% Hall's Bootstrap UCL	7.642	
Kolmogorov-Smirnov Test Statistic		0.197			95% Percentile Bootstrap UCL	7.689	
Kolmogorov-Smirnov 5% Critical Value		0.294			95% BCA Bootstrap UCL	7.689	
Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL	9.062	
					97.5% Chebyshev(Mean, Sd) UCL	9.981	
Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL	11.79	
95% Approximate Gamma UCL		8					
95% Adjusted Gamma UCL		8.3					
Potential UCL to Use					Use 95% Student's-t UCL	7.862	

Result or 1/2 SDL (copper)

General Statistics			
Number of Valid Samples		8	Number of Unique Samples 8
Raw Statistics		Log-transformed Statistics	
Minimum	8.33	Minimum of Log Data	2.12
Maximum	26.8	Maximum of Log Data	3.288
Mean	15.2	Mean of log Data	2.623
Median	12.55	SD of log Data	0.467
SD	7.421		
Coefficient of Variation	0.488		
Skewness	0.836		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.17	95% H-UCL	23.17
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.14
95% Adjusted-CLT UCL	20.34	97.5% Chebyshev (MVUE) UCL	30.9
95% Modified-t UCL	20.3	99% Chebyshev (MVUE) UCL	40.26
Gamma Distribution Test		Data Distribution	
k star (bias corrected)		Data appear Normal at 5% Significance Level	
Theta Star			
nu star			
Approximate Chi Square Value (.05)		Nonparametric Statistics	

Adjusted Level of Significance	0.0195	95% CLT UCL	19.51
Adjusted Chi Square Value	34.49	95% Jackknife UCL	20.17
		95% Standard Bootstrap UCL	19.15
Anderson-Darling Test Statistic	0.476	95% Bootstrap-t UCL	23.91
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	21.16
Kolmogorov-Smirnov Test Statistic	0.192	95% Percentile Bootstrap UCL	19.18
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	19.81
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.64
		97.5% Chebyshev(Mean, Sd) UCL	31.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	41.31
95% Approximate Gamma UCL	21.56		
95% Adjusted Gamma UCL	23.64		
Potential UCL to Use		Use 95% Student's-t UCL	20.17

Result or 1/2 SDL (Iron)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	11300	Minimum of Log Data	9.333
Maximum	20100	Maximum of Log Data	9.908
Mean	15275	Mean of log Data	9.614
Median	15500	SD of log Data	0.214
SD	3227		
Coefficient of Variation	0.211		
Skewness	0.139		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17437	95% H-UCL	17970
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20327
95% Adjusted-CLT UCL	17212	97.5% Chebyshev (MVUE) UCL	22512
95% Modified-t UCL	17446	99% Chebyshev (MVUE) UCL	26805
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	15.92	Data appear Normal at 5% Significance Level	
Theta Star	959.6		
nu star	254.7		
Approximate Chi Square Value (.05)	218.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	17152
Adjusted Chi Square Value	210.3	95% Jackknife UCL	17437
		95% Standard Bootstrap UCL	16994
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	17461
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	16993

Kolmogorov-Smirnov Test Statistic	0.203	95% Percentile Bootstrap UCL	17025
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	17050
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20249
		97.5% Chebyshev(Mean, Sd) UCL	22401
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26629
95% Approximate Gamma UCL	17786		
95% Adjusted Gamma UCL	18500		
Potential UCL to Use		Use 95% Student's-t UCL	17437

Result or 1/2 SDL (lead)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	10.6	Minimum of Log Data	2.361
Maximum	30.5	Maximum of Log Data	3.418
Mean	17.54	Mean of log Data	2.798
Median	15.5	SD of log Data	0.384
SD	7.076		
Coefficient of Variation	0.403		
Skewness	0.923		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22.28	95% H-UCL	24.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.92
95% Adjusted-CLT UCL	22.52	97.5% Chebyshev (MVUE) UCL	32.44
95% Modified-t UCL	22.41	99% Chebyshev (MVUE) UCL	41.3

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.874	Data appear Normal at 5% Significance Level	
Theta Star	3.598		
nu star	77.99		
Approximate Chi Square Value (.05)	58.64	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.65
Adjusted Chi Square Value	54.42	95% Jackknife UCL	22.28
		95% Standard Bootstrap UCL	21.37
Anderson-Darling Test Statistic	0.324	95% Bootstrap-t UCL	23.69
Anderson-Darling 5% Critical Value	0.717	95% Hall's Bootstrap UCL	22.55
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	21.63
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	22.26
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.44
		97.5% Chebyshev(Mean, Sd) UCL	33.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	42.43

95% Approximate Gamma UCL		23.32			
95% Adjusted Gamma UCL		25.13			
Potential UCL to Use			Use 95% Student's-t UCL		22.28
Result or 1/2 SDL (lithium)					
General Statistics					
Number of Valid Samples		8	Number of Unique Samples		8
Raw Statistics			Log-transformed Statistics		
	Minimum	13.5		Minimum of Log Data	2.603
	Maximum	23.7		Maximum of Log Data	3.165
	Mean	18.48		Mean of log Data	2.895
	Median	18.85		SD of log Data	0.225
	SD	4.071			
	Coefficient of Variation	0.22			
	Skewness	0.0036			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.903		Shapiro Wilk Test Statistic	0.897
	Shapiro Wilk Critical Value	0.818		Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
	95% Student's-t UCL	21.2		95% H-UCL	21.95
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	24.92
	95% Adjusted-CLT UCL	20.84		97.5% Chebyshev (MVUE) UCL	27.7
	95% Modified-t UCL	21.2		99% Chebyshev (MVUE) UCL	33.17
Gamma Distribution Test			Data Distribution		
	k star (bias corrected)	14.45	Data appear Normal at 5% Significance Level		
	Theta Star	1.278			
	nu star	231.2			
	Approximate Chi Square Value (.05)	197	Nonparametric Statistics		
	Adjusted Level of Significance	0.0195		95% CLT UCL	20.84
	Adjusted Chi Square Value	189		95% Jackknife UCL	21.2
				95% Standard Bootstrap UCL	20.67
	Anderson-Darling Test Statistic	0.416		95% Bootstrap-t UCL	21.17
	Anderson-Darling 5% Critical Value	0.716		95% Hall's Bootstrap UCL	20.56
	Kolmogorov-Smirnov Test Statistic	0.22		95% Percentile Bootstrap UCL	20.65
	Kolmogorov-Smirnov 5% Critical Value	0.294		95% BCA Bootstrap UCL	20.68
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL	24.75
				97.5% Chebyshev(Mean, Sd) UCL	27.46
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL	32.8
	95% Approximate Gamma UCL	21.68			
	95% Adjusted Gamma UCL	22.6			
Potential UCL to Use			Use 95% Student's-t UCL		21.2

Result or 1/2 SDL (m,p-cresol)

General Statistics

Number of Valid Samples	8	Number of Unique Samples	7
-------------------------	---	--------------------------	---

Raw Statistics

Log-transformed Statistics

Minimum	0.0105	Minimum of Log Data	-4.556
Maximum	0.0375	Maximum of Log Data	-3.283
Mean	0.0149	Mean of log Data	-4.31
Median	0.0117	SD of log Data	0.424
SD	0.0092		
Coefficient of Variation	0.619		
Skewness	2.758		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.523	Shapiro Wilk Test Statistic	0.61
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

Assuming Lognormal Distribution

95% Student's-t UCL	0.021	95% H-UCL	0.0211
---------------------	-------	-----------	--------

95% UCLs (Adjusted for Skewness)

95% Chebyshev (MVUE) UCL	0.0241
--------------------------	--------

95% Adjusted-CLT UCL	0.0236	97.5% Chebyshev (MVUE) UCL	0.0282
----------------------	--------	----------------------------	--------

95% Modified-t UCL	0.0216	99% Chebyshev (MVUE) UCL	0.0363
--------------------	--------	--------------------------	--------

Gamma Distribution Test

Data Distribution

k star (bias corrected)	3.242	Data do not follow a Discernable Distribution (0.05)
-------------------------	-------	--

Theta Star	0.0045
------------	--------

nu star	51.87
---------	-------

Approximate Chi Square Value (.05)	36.33
------------------------------------	-------

Nonparametric Statistics

Adjusted Level of Significance	0.0195	95% CLT UCL	0.0202
--------------------------------	--------	-------------	--------

Adjusted Chi Square Value	33.07	95% Jackknife UCL	0.021
---------------------------	-------	-------------------	-------

95% Standard Bootstrap UCL	0.02
----------------------------	------

Anderson-Darling Test Statistic	1.626	95% Bootstrap-t UCL	0.0564
---------------------------------	-------	---------------------	--------

Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.0455
------------------------------------	-------	--------------------------	--------

Kolmogorov-Smirnov Test Statistic	0.401	95% Percentile Bootstrap UCL	0.0212
-----------------------------------	-------	------------------------------	--------

Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0244
--------------------------------------	-------	-----------------------	--------

Data not Gamma Distributed at 5% Significance Level

95% Chebyshev(Mean, Sd) UCL	0.0291
-----------------------------	--------

97.5% Chebyshev(Mean, Sd) UCL	0.0352
-------------------------------	--------

Assuming Gamma Distribution

99% Chebyshev(Mean, Sd) UCL	0.0472
-----------------------------	--------

95% Approximate Gamma UCL	0.0212
---------------------------	--------

95% Adjusted Gamma UCL	0.0233
------------------------	--------

Potential UCL to Use

Use 95% Student's-t UCL	0.021
-------------------------	-------

or 95% Modified-t UCL	0.0216
-----------------------	--------

Result or 1/2 SDL (manganese)

General Statistics

Number of Valid Samples				8	Number of Unique Samples				8
Raw Statistics					Log-transformed Statistics				
	Minimum	352				Minimum of Log Data	5.864		
	Maximum	711				Maximum of Log Data	6.567		
	Mean	487.6				Mean of log Data	6.162		
	Median	453				SD of log Data	0.247		
	SD	124.2							
	Coefficient of Variation	0.255							
	Skewness	0.739							
Relevant UCL Statistics									
Normal Distribution Test					Lognormal Distribution Test				
	Shapiro Wilk Test Statistic	0.921				Shapiro Wilk Test Statistic	0.941		
	Shapiro Wilk Critical Value	0.818				Shapiro Wilk Critical Value	0.818		
Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level				
Assuming Normal Distribution					Assuming Lognormal Distribution				
	95% Student's-t UCL	570.8				95% H-UCL	590.3		
95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	673.6		
	95% Adjusted-CLT UCL	572.1				97.5% Chebyshev (MVUE) UCL	754.2		
	95% Modified-t UCL	572.7				99% Chebyshev (MVUE) UCL	912.6		
Gamma Distribution Test					Data Distribution				
	k star (bias corrected)	11.66			Data appear Normal at 5% Significance Level				
	Theta Star	41.81							
	nu star	186.6							
	Approximate Chi Square Value (.05)	156			Nonparametric Statistics				
	Adjusted Level of Significance	0.0195				95% CLT UCL	559.8		
	Adjusted Chi Square Value	148.9				95% Jackknife UCL	570.8		
						95% Standard Bootstrap UCL	556		
	Anderson-Darling Test Statistic	0.297				95% Bootstrap-t UCL	592.1		
	Anderson-Darling 5% Critical Value	0.716				95% Hall's Bootstrap UCL	575		
	Kolmogorov-Smirnov Test Statistic	0.171				95% Percentile Bootstrap UCL	560.3		
	Kolmogorov-Smirnov 5% Critical Value	0.294				95% BCA Bootstrap UCL	567		
Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	679		
Assuming Gamma Distribution						97.5% Chebyshev(Mean, Sd) UCL	761.8		
	95% Approximate Gamma UCL	583.3				99% Chebyshev(Mean, Sd) UCL	924.4		
	95% Adjusted Gamma UCL	611							
Potential UCL to Use									
						Use 95% Student's-t UCL	570.8		

Result or 1/2 SDL (methyl iodide)

General Statistics									
Number of Valid Samples				8	Number of Unique Samples				8
Raw Statistics					Log-transformed Statistics				
	Minimum	7.9500E-4				Minimum of Log Data	-7.137		
	Maximum	0.041				Maximum of Log Data	-3.194		

Mean	0.0081	Mean of log Data	-5.689
Median	0.0039	SD of log Data	1.357
SD	0.0135		
Coefficient of Variation	1.669		
Skewness	2.624		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.587	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0172	95% H-UCL	0.0836
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0222
95% Adjusted-CLT UCL	0.0207	97.5% Chebyshev (MVUE) UCL	0.0288
95% Modified-t UCL	0.0179	99% Chebyshev (MVUE) UCL	0.0416
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.516	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0157		
nu star	8.249		
Approximate Chi Square Value (.05)	2.88	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.016
Adjusted Chi Square Value	2.141	95% Jackknife UCL	0.0172
		95% Standard Bootstrap UCL	0.0154
Anderson-Darling Test Statistic	0.64	95% Bootstrap-t UCL	0.0493
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	0.0518
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	0.0172
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0188
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.029
		97.5% Chebyshev(Mean, Sd) UCL	0.038
		99% Chebyshev(Mean, Sd) UCL	0.0558
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0232		
95% Adjusted Gamma UCL	0.0313		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0232

Result or 1/2 SDL (molybdenum)

General Statistics

Number of Valid Samples		8	Number of Unique Samples		5
Raw Statistics			Log-transformed Statistics		
Minimum	0.055		Minimum of Log Data	-2.9	
Maximum	0.6		Maximum of Log Data	-0.511	
Mean	0.146		Mean of log Data	-2.382	
Median	0.06		SD of log Data	0.881	
SD	0.191				
Coefficient of Variation	1.312				
Skewness	2.461				

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.569	Shapiro Wilk Test Statistic	0.673
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.274	95% H-UCL	0.395
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.306
95% Adjusted-CLT UCL	0.32	97.5% Chebyshev (MVUE) UCL	0.382
95% Modified-t UCL	0.283	99% Chebyshev (MVUE) UCL	0.533
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.857	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.17		
nu star	13.71		
Approximate Chi Square Value (.05)	6.372	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.257
Adjusted Chi Square Value	5.162	95% Jackknife UCL	0.274
		95% Standard Bootstrap UCL	0.25
Anderson-Darling Test Statistic	1.46	95% Bootstrap-t UCL	3.299
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	2.48
Kolmogorov-Smirnov Test Statistic	0.409	95% Percentile Bootstrap UCL	0.263
Kolmogorov-Smirnov 5% Critical Value	0.3	95% BCA Bootstrap UCL	0.328
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.44
		97.5% Chebyshev(Mean, Sd) UCL	0.568
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.818
95% Approximate Gamma UCL	0.313		
95% Adjusted Gamma UCL	0.387		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.44
Result or 1/2 SDL (nickel)			
General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	12.3	Minimum of Log Data	2.51
Maximum	20.6	Maximum of Log Data	3.025
Mean	16.33	Mean of log Data	2.777
Median	16.65	SD of log Data	0.193
SD	3.09		
Coefficient of Variation	0.189		
Skewness	-0.0427		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level				Data appear Lognormal at 5% Significance Level			
Assuming Normal Distribution				Assuming Lognormal Distribution			
95% Student's-t UCL		18.4		95% H-UCL		18.87	
95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL			
95% Adjusted-CLT UCL		18.1		97.5% Chebyshev (MVUE) UCL		23.31	
95% Modified-t UCL		18.39		99% Chebyshev (MVUE) UCL		27.46	
Gamma Distribution Test				Data Distribution			
k star (bias corrected)		19.56		Data appear Normal at 5% Significance Level			
Theta Star		0.835					
nu star		312.9					
Approximate Chi Square Value (.05)		272.9		Nonparametric Statistics			
Adjusted Level of Significance		0.0195		95% CLT UCL		18.12	
Adjusted Chi Square Value		263.5		95% Jackknife UCL		18.4	
				95% Standard Bootstrap UCL		18.04	
Anderson-Darling Test Statistic		0.362		95% Bootstrap-t UCL		18.49	
Anderson-Darling 5% Critical Value		0.716		95% Hall's Bootstrap UCL		17.89	
Kolmogorov-Smirnov Test Statistic		0.218		95% Percentile Bootstrap UCL		17.96	
Kolmogorov-Smirnov 5% Critical Value		0.294		95% BCA Bootstrap UCL		17.91	
Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		21.09	
				97.5% Chebyshev(Mean, Sd) UCL		23.15	
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		27.2	
95% Approximate Gamma UCL		18.72					
95% Adjusted Gamma UCL		19.39					
Potential UCL to Use				Use 95% Student's-t UCL		18.4	

Result or 1/2 SDL (pyrene)

General Statistics			
Number of Valid Samples		8	Number of Unique Samples
			6
Raw Statistics		Log-transformed Statistics	
Minimum	0.009	Minimum of Log Data	-4.711
Maximum	0.0265	Maximum of Log Data	-3.631
Mean	0.0147	Mean of log Data	-4.32
Median	0.0105	SD of log Data	0.469
SD	0.0073		
Coefficient of Variation	0.497		
Skewness	0.806		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic		Shapiro Wilk Test Statistic	0.788
Shapiro Wilk Critical Value		Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL		95% H-UCL	0.0225
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0253

95% Adjusted-CLT UCL	0.0197	97.5% Chebyshev (MVUE) UCL	0.0299
95% Modified-t UCL	0.0197	99% Chebyshev (MVUE) UCL	0.039
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.283	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.0044		
nu star	52.53		
Approximate Chi Square Value (.05)	36.89	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.019
Adjusted Chi Square Value	33.6	95% Jackknife UCL	0.0196
		95% Standard Bootstrap UCL	0.0188
Anderson-Darling Test Statistic	0.881	95% Bootstrap-t UCL	0.0216
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	0.0178
Kolmogorov-Smirnov Test Statistic	0.279	95% Percentile Bootstrap UCL	0.019
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	0.0191
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.026
		97.5% Chebyshev(Mean, Sd) UCL	0.0308
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0404
95% Approximate Gamma UCL	0.021		
95% Adjusted Gamma UCL	0.023		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.021

Result or 1/2 SDL (strontium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	63.3	Minimum of Log Data	4.148
Maximum	181	Maximum of Log Data	5.198
Mean	103.6	Mean of log Data	4.575
Median	89.45	SD of log Data	0.38
SD	41.82		
Coefficient of Variation	0.404		
Skewness	1		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	131.6	95% H-UCL	142.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	164.1
95% Adjusted-CLT UCL	133.5	97.5% Chebyshev (MVUE) UCL	190.5
95% Modified-t UCL	132.5	99% Chebyshev (MVUE) UCL	242.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.946	Data appear Normal at 5% Significance Level	

Theta Star	20.94		
nu star	79.14		
Approximate Chi Square Value (.05)	59.65	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	127.9
Adjusted Chi Square Value	55.38	95% Jackknife UCL	131.6
		95% Standard Bootstrap UCL	126.2
Anderson-Darling Test Statistic	0.349	95% Bootstrap-t UCL	145.3
Anderson-Darling 5% Critical Value	0.717	95% Hall's Bootstrap UCL	138.1
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	127.7
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	132.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	168.1
		97.5% Chebyshev(Mean, Sd) UCL	195.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	250.7
95% Approximate Gamma UCL	137.5		
95% Adjusted Gamma UCL	148		
Potential UCL to Use		Use 95% Student's-t UCL	131.6

Result or 1/2 SDL (titanium)

General Statistics			
Number of Valid Samples	8	Number of Unique Samples	8
Raw Statistics		Log-transformed Statistics	
Minimum	19.1	Minimum of Log Data	2.95
Maximum	40.5	Maximum of Log Data	3.701
Mean	30	Mean of log Data	3.367
Median	32.65	SD of log Data	0.286
SD	8.035		
Coefficient of Variation	0.268		
Skewness	-0.263		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Test Statistic	0.883
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	35.38	95% H-UCL	37.72
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	43.33
95% Adjusted-CLT UCL	34.39	97.5% Chebyshev (MVUE) UCL	49.08
95% Modified-t UCL	35.34	99% Chebyshev (MVUE) UCL	60.37
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.311	Data appear Normal at 5% Significance Level	
Theta Star	3.222		
nu star	149		
Approximate Chi Square Value (.05)	121.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	34.67
Adjusted Chi Square Value	115.5	95% Jackknife UCL	35.38

Data appear Gamma Distributed at 5% Significance Level				95% Chebyshev(Mean, Sd) UCL		28.15
				97.5% Chebyshev(Mean, Sd) UCL		30.89
Assuming Gamma Distribution				99% Chebyshev(Mean, Sd) UCL		36.27
95% Approximate Gamma UCL		24.98				
95% Adjusted Gamma UCL		25.87				
Potential UCL to Use				Use 95% Student's-t UCL		24.58
Result or 1/2 SDL (zinc)						
General Statistics						
Number of Valid Samples		8	Number of Unique Samples		8	
Raw Statistics			Log-transformed Statistics			
Minimum		38.2	Minimum of Log Data		3.643	
Maximum		999	Maximum of Log Data		6.907	
Mean		332.3	Mean of log Data		4.894	
Median		55.65	SD of log Data		1.489	
SD		407.7				
Coefficient of Variation		1.227				
Skewness		0.879				
Relevant UCL Statistics						
Normal Distribution Test			Lognormal Distribution Test			
Shapiro Wilk Test Statistic		0.737	Shapiro Wilk Test Statistic		0.746	
Shapiro Wilk Critical Value		0.818	Shapiro Wilk Critical Value		0.818	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution			Assuming Lognormal Distribution			
95% Student's-t UCL		605.4	95% H-UCL		6104	
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL		1069	
95% Adjusted-CLT UCL		617.3	97.5% Chebyshev (MVUE) UCL		1392	
95% Modified-t UCL		612.9	99% Chebyshev (MVUE) UCL		2027	
Gamma Distribution Test			Data Distribution			
k star (bias corrected)		0.5	Data do not follow a Discernable Distribution (0.05)			
Theta Star		664.4				
nu star		8.002				
Approximate Chi Square Value (.05)		2.736	Nonparametric Statistics			
Adjusted Level of Significance		0.0195	95% CLT UCL		569.4	
Adjusted Chi Square Value		2.021	95% Jackknife UCL		605.4	
			95% Standard Bootstrap UCL		557.7	
Anderson-Darling Test Statistic		1.087	95% Bootstrap-t UCL		766.5	
Anderson-Darling 5% Critical Value		0.751	95% Hall's Bootstrap UCL		474.6	
Kolmogorov-Smirnov Test Statistic		0.365	95% Percentile Bootstrap UCL		570.5	
Kolmogorov-Smirnov 5% Critical Value		0.306	95% BCA Bootstrap UCL		594.2	
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL		960.7	
			97.5% Chebyshev(Mean, Sd) UCL		1233	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL		1767	
95% Approximate Gamma UCL		971.8				
95% Adjusted Gamma UCL		1316				

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ANTIMONY - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	1.118	1.228	83	0.953	0.878	10

Calculated Difference = 0.165
 Standard Error of the Difference = 0.407177285
 Degree of Freedom = 91
 t = 0.405228892
 p = 0.3445
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 background mean is not statistically less than site mean

ARSENIC - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	3.735	4.012	83	3.438	1.792	10

Calculated Difference = 0.297
 Standard Error of the Difference = 1.126036589
 Degree of Freedom = 91
 t = 0.263756971
 p = 0.3963
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

BARIUM - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	345.2	349	83	333.1	288.1	10

Calculated Difference = 12.1
 Standard Error of the Difference = 124.3580544
 Degree of Freedom = 91
 t = 0.097299689
 p = 0.4614 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically greater than background mean

CADMIUM - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.464	1.141	83	0.0311	0.0398	10

Calculated Difference = 0.4329
 Standard Error of the Difference = 0.277019204
 Degree of Freedom = 91
 t = 1.562707545
 p = 0.0608 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically greater than background mean

CHROMIUM - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	16.08	15.7	83	15.2	3.02	10

Calculated Difference = 0.88
 Standard Error of the Difference = 3.925742193
 Degree of Freedom = 91
 t = 0.224161434
 p = 0.4116
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

COPPER - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	27.98	35.35	83	12.12	3.955	10

Calculated Difference = 15.86
 Standard Error of the Difference = 8.664375822
 Degree of Freedom = 91
 t = 1.830483849
 p = 0.0353 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically greater than background mean

LEAD - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	69.61	112.8	83	13.43	1.547	10

Calculated Difference = 56.18
 Standard Error of the Difference = 27.36239203
 Degree of Freedom = 91
 t = 2.053183068
 p = 0.0215
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is statistically greater than background mean

LITHIUM - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	7.856	5.715	83	21.14	5.166	10

Calculated Difference = 13.284
 Standard Error of the Difference = 2.142429492
 Degree of Freedom = 91
 t = 6.200437423
 p = 0.00 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically less than background mean

MANGANESE - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	257.4	129.3	83	377.4	93.75	10

Calculated Difference = 120
 Standard Error of the Difference = 43.15491673
 Degree of Freedom = 91
 t = 2.780679679
 p = 0.0033 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically less than background mean

MERCURY - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0227	0.0752	83	0.0213	0.00479	10

Calculated Difference = 0.0014
 Standard Error of the Difference = 0.01830147
 Degree of Freedom = 91
 t = 0.076496585
 p = 0.4698
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

MOLYBDENUM - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	1.306	1.588	83	0.522	0.0739	10

Calculated Difference = 0.784
 Standard Error of the Difference = 0.385854899
 Degree of Freedom = 91
 t = 2.031851873
 p = 0.0225 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically greater than background mean

ZINC - SOUTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	601.2	672.8	83	247	364.6	10

Calculated Difference = 354.2
 Standard Error of the Difference = 199.8008143
 Degree of Freedom = 91
 t = 1.772765547
 p = 0.0399 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically greater than background mean

ANTIMONY - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	1.023	1.14	166	0.953	0.878	10

Calculated Difference = 0.07
 Standard Error of the Difference = 0.39183601
 Degree of Freedom = 174
 t = 0.178646164
 p = 0.4292
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 background mean is not statistically less than site mean

ARSENIC - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	3.331	3.269	166	3.438	1.792	10

Calculated Difference = 0.107
 Standard Error of the Difference = 0.97454393
 Degree of Freedom = 174
 t = 0.109794948
 p = 0.4563
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

BARIUM - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	237.4	274.8	166	333.1	288.1	10

Calculated Difference = 95.7
 Standard Error of the Difference = 112.8814519
 Degree of Freedom = 174
 t = 0.847792072
 p = 0.1989
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

CADMIUM - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.335	0.859	166	0.0311	0.0398	10

Calculated Difference = 0.3039
 Standard Error of the Difference = 0.208717917
 Degree of Freedom = 174
 t = 1.456032165
 p = 0.0736
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

CHROMIUM - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	13.53	12.49	166	15.2	3.02	10

Calculated Difference = 1.67
 Standard Error of the Difference = 3.176242508
 Degree of Freedom = 174
 t = 0.525778493
 p = 0.2998
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

COPPER - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	24.26	46.76	166	12.12	3.955	10

Calculated Difference = 12.14
 Standard Error of the Difference = 11.40971991
 Degree of Freedom = 174
 t = 1.064005085
 p = 0.1444
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LEAD - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	53.52	104.2	166	13.43	1.547	10

Calculated Difference = 40.09
 Standard Error of the Difference = 25.27694655
 Degree of Freedom = 174
 t = 1.586030177
 p = 0.0573
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically greater than background mean

LITHIUM - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	10.03	6.299	166	21.14	5.166	10

Calculated Difference = 11.11
 Standard Error of the Difference = 2.236676187
 Degree of Freedom = 174
 t = 4.967191972
 p = 0.00
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is statistically less than background mean

MANGANESE - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	261.2	127.4	166	377.4	93.75	10

Calculated Difference = 116.2
 Standard Error of the Difference = 42.82121949
 Degree of Freedom = 174
 t = 2.713607912
 p = 0.0037
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is statistically less than background mean

MERCURY - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0262	0.0941	166	0.0213	0.00479	10

Calculated Difference = 0.0049
 Standard Error of the Difference = 0.022872813
 Degree of Freedom = 174
 t = 0.214228129
 p = 0.4153
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

MOLYBDENUM - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.89	1.488	166	0.522	0.0739	10

Calculated Difference = 0.368
 Standard Error of the Difference = 0.361648843
 Degree of Freedom = 174
 t = 1.017561668
 p = 0.1550
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ZINC - SOUTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	433.8	786.8	166	247	364.6	10

Calculated Difference =	186.8	
Standard Error of the Difference =	222.9535182	
Degree of Freedom =	174	
t =	0.8378428	
p =	0.2016	calculated at www.stat.tamu.edu/~west/applets/tdemo.html
Data sets significantly different =	No	site soil mean is not statistically greater than background mean

ANTIMONY - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	1.744	2.146	18	0.953	0.878	10

Calculated Difference = 0.791
 Standard Error of the Difference = 0.589906214
 Degree of Freedom = 26
 t = 1.340891114
 p = 0.0958 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically greater than background mean

ARSENIC - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	2.522	1.164	18	3.438	1.792	10

Calculated Difference = 0.916
 Standard Error of the Difference = 0.633108336
 Degree of Freedom = 26
 t = 1.446829789
 p = 0.0799 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically less than background mean

BARIUM - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	145.2	115.8	18	333.1	288.1	10

Calculated Difference = 187.9
 Standard Error of the Difference = 95.33605484
 Degree of Freedom = 26
 t = 1.970922756
 p = 0.0297 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically less than background mean

CADMIUM - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.207	0.252	18	0.0311	0.0398	10

Calculated Difference = 0.1759
 Standard Error of the Difference = 0.06240139
 Degree of Freedom = 26
 t = 2.818847487
 p = 0.0045
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically greater than background mean

CHROMIUM - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	20.26	27.58	18	15.2	3.02	10

Calculated Difference = 5.06
 Standard Error of the Difference = 6.7569619
 Degree of Freedom = 26
 t = 0.748857264
 p = 0.2303
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

COPPER - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	24.13	44.66	18	12.12	3.955	10

Calculated Difference = 12.01
 Standard Error of the Difference = 10.90360718
 Degree of Freedom = 26
 t = 1.101470348
 p = 0.1405
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LEAD - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	57.7	111.1	18	13.43	1.547	10

Calculated Difference = 44.27
 Standard Error of the Difference = 26.95014837
 Degree of Freedom = 26
 t = 1.64266257
 p = 0.0562
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically greater than background mean

LITHIUM - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	16.57	5.136	18	21.14	5.166	10

Calculated Difference = 4.57
 Standard Error of the Difference = 2.054368963
 Degree of Freedom = 26
 t = 2.224527377
 p = 0.0175 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically less than background mean

MANGANESE - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	369.5	247.7	18	377.4	93.75	10

Calculated Difference = 7.9
 Standard Error of the Difference = 66.99284257
 Degree of Freedom = 26
 t = 0.117923045
 p = 0.4535 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site surface soil mean is not statistically less than background mean

MERCURY - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0126	0.0163	18	0.0213	0.00479	10

Calculated Difference = 0.0087
 Standard Error of the Difference = 0.004233584
 Degree of Freedom = 26
 t = 2.054996426
 p = 0.0250 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site soil mean is statistically less than background mean

MOLYBDENUM - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.949	2.5	18	0.522	0.0739	10

Calculated Difference = 0.427
 Standard Error of the Difference = 0.606789238
 Degree of Freedom = 26
 t = 0.703703977
 p = 0.2439
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ZINC - NORTH OF MARLIN SURFACE SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	418.4	1308	18	247	364.6	10

Calculated Difference = 171.4
 Standard Error of the Difference = 337.5387012
 Degree of Freedom = 26
 t = 0.507793623
 p = 0.3080
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ANTIMONY - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	1.416	1.779	36	0.953	0.878	10

Calculated Difference = 0.463
 Standard Error of the Difference = 0.513084318
 Degree of Freedom = 44
 t = 0.902385794
 p = 0.1859
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ARSENIC - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	2.573	1.369	36	3.438	1.792	10

Calculated Difference = 0.865
 Standard Error of the Difference = 0.656788524
 Degree of Freedom = 44
 t = 1.317014486
 p = 0.0973
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

BARIUM - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	142.1	95.9	36	333.1	288.1	10

Calculated Difference = 191
 Standard Error of the Difference = 94.02738869
 Degree of Freedom = 44
 t = 2.031323029
 p = 0.0242 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site surface soil mean is statistically less than background mean

CADMIUM - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.193	0.239	36	0.0311	0.0398	10

Calculated Difference = 0.1619
 Standard Error of the Difference = 0.059316632
 Degree of Freedom = 44
 t = 2.729419974
 p = 0.0045
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically greater than background mean

CHROMIUM - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	17.17	19.6	36	15.2	3.02	10

Calculated Difference = 1.97
 Standard Error of the Difference = 4.848678898
 Degree of Freedom = 44
 t = 0.406296239
 p = 0.3432
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

COPPER - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	18.7	31.9	36	12.12	3.955	10

Calculated Difference = 6.58
 Standard Error of the Difference = 7.837321881
 Degree of Freedom = 44
 t = 0.83957251
 p = 0.2028
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LEAD - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	37.8	80.99	36	13.43	1.547	10

Calculated Difference = 24.37
 Standard Error of the Difference = 19.6490511
 Degree of Freedom = 44
 t = 1.240263455
 p = 0.1108 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site surface soil mean is not statistically greater than background mean

LITHIUM - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	18.84	5.952	36	21.14	5.166	10

Calculated Difference = 2.3
 Standard Error of the Difference = 2.180058677
 Degree of Freedom = 44
 t = 1.055017475
 p = 0.1486
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

MANGANESE - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	347	204.1	36	377.4	93.75	10

Calculated Difference = 30.4
 Standard Error of the Difference = 57.70014591
 Degree of Freedom = 44
 t = 0.526861753
 p = 0.3005 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site surface soil mean is not statistically less than background mean

MERCURY - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0094	0.0124	36	0.0213	0.00479	10

Calculated Difference = 0.0119
 Standard Error of the Difference = 0.00336736
 Degree of Freedom = 44
 t = 3.533925295
 p = 0.0005
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

MOLYBDENUM - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.586	1.788	36	0.522	0.0739	10

Calculated Difference = 0.064
 Standard Error of the Difference = 0.434282915
 Degree of Freedom = 44
 t = 0.147369371
 p = 0.4417
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ZINC - NORTH OF MARLIN SOIL

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	242.5	929.4	36	247	364.6	10

Calculated Difference =	4.5	
Standard Error of the Difference =	253.1879948	
Degree of Freedom =	44	
t =	0.017773355	
p =	0.4929	calculated at www.stat.tamu.edu/~west/applets/tdemo.html
Data sets significantly different =	No	site soil mean is not statistically less than background mean

ZINC - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	45.36	19.88	16	36.04	13.68	9

Calculated Difference = 9.32
 Standard Error of the Difference = 6.477819531
 Degree of Freedom = 23
 t = 1.438755735
 p = 0.0818
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

4,4'-DDT - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
4,4'-DDT	0.00041103	0.0007962	17	0.0001555	0.00015569	9

Calculated Difference = 0.00025553
 Standard Error of the Difference = 0.000199284
 Degree of Freedom = 24
 t = 1.28223903
 p = 0.106
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ALUMINUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Aluminum	6854	2346	16	12213	6892	9

Calculated Difference = 5359
 Standard Error of the Difference = 2252.49071
 Degree of Freedom = 23
 t = 2.379144107
 p = 0.013
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

ANTIMONY - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	2.245	1.751	16	4.023	2.215	9

Calculated Difference = 1.778
 Standard Error of the Difference = 0.819130942
 Degree of Freedom = 23
 t = 2.170593136
 p = 0.0203
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

ARSENIC - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	4.026	1.4	16	5.813	3.107	9

Calculated Difference = 1.787
 Standard Error of the Difference = 1.039537887
 Degree of Freedom = 23
 t = 1.719033066
 p = 0.0495
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

BARIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	215.3	59.65	16	209.7	47.73	9

Calculated Difference = 5.6
 Standard Error of the Difference = 20.90733397
 Degree of Freedom = 23
 t = 0.267848594
 p = 0.3956
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

BENZO(B)FLUORANTHENE - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Benzo(b)fluoranthene	0.1	0.157	16	0.0087	0.0106	9

Calculated Difference = 0.0913
 Standard Error of the Difference = 0.038225347
 Degree of Freedom = 23
 t = 2.388467508
 p = 0.5 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically greater than background mean

BERYLLIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Beryllium	0.463	0.149	16	0.766	0.403	9

Calculated Difference = 0.303
 Standard Error of the Difference = 0.13246449
 Degree of Freedom = 23
 t = 2.287405473
 p = 0.0159 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site soil mean is statistically less than background mean

BORON - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Boron	12.04	9.92	16	27.64	12.82	9

Calculated Difference = 15.6
 Standard Error of the Difference = 4.714218044
 Degree of Freedom = 23
 t = 3.30913841
 p = 0.0015
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

COBALT - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cobalt	4.385	1.131	16	6.698	3.165	9

Calculated Difference = 2.313
 Standard Error of the Difference = 1.037770333
 Degree of Freedom = 23
 t = 2.228816845
 p = 0.0179 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site soil mean is statistically less than background mean

COPPER - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	7.112	2.997	16	8.138	5.165	9

Calculated Difference = 1.026
 Standard Error of the Difference = 1.787757246
 Degree of Freedom = 23
 t = 0.573903421
 p = 0.2858 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically less than background mean

IRON - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Iron	13352	5546	16	16496	8097	9

Calculated Difference = 3144
 Standard Error of the Difference = 2892.307356
 Degree of Freedom = 23
 t = 1.087021403
 p = 0.1441
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

LEAD - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	11.56	7.161	16	9.587	3.602	9

Calculated Difference = 1.973
 Standard Error of the Difference = 2.076994545
 Degree of Freedom = 23
 t = 0.949930275
 p = 0.1760
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LITHIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	10.53	3.559	16	21.4	14.41	9

Calculated Difference = 10.87
 Standard Error of the Difference = 4.637876359
 Degree of Freedom = 23
 t = 2.343745102
 p = 0.0141
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

MANGANESE - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	283.3	87.59	16	330.7	88.99	9

Calculated Difference = 47.4
 Standard Error of the Difference = 35.25927685
 Degree of Freedom = 23
 t = 1.34432706
 p = 0.0960 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically less than background mean

MERCURY - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0201	0.0073	16	0.0176	0.0132	9

Calculated Difference = 0.0025
 Standard Error of the Difference = 0.004534171
 Degree of Freedom = 23
 t = 0.551368717
 p = 0.5000 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically greater than background mean

MOLYBDENUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.667	1.358	16	0.241	0.0675	9

Calculated Difference = 0.426
 Standard Error of the Difference = 0.330054329
 Degree of Freedom = 23
 t = 1.290696598
 p = 0.1048
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

NICKEL - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Nickel	9.589	2.741	16	14.91	8.111	9

Calculated Difference = 5.321
 Standard Error of the Difference = 2.649675082
 Degree of Freedom = 23
 t = 2.008170751
 p = 0.5000 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = No site soil mean is not statistically less than background mean

STRONTIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Strontium	44.86	14.43	16	59.17	22.06	9

Calculated Difference = 14.31
 Standard Error of the Difference = 7.804670623
 Degree of Freedom = 23
 t = 1.833517478
 p = 0.0398 calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 Data sets significantly different = Yes site soil mean is statistically less than background mean

TITANIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Titanium	25.58	5.051	16	31.79	10.49	9

Calculated Difference = 6.21
 Standard Error of the Difference = 3.536205768
 Degree of Freedom = 23
 t = 1.756119527
 p = 0.0462
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

VANADIUM - INTRACOASTAL WATERWAY SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Vanadium	13.86	3.523	16	20.21	9.135	9

Calculated Difference = 6.35
 Standard Error of the Difference = 3.012459534
 Degree of Freedom = 23
 t = 2.107912133
 p = 0.0231
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

ANTIMONY - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	1.154	0.724	47	0.953	0.878	10

Calculated Difference = 0.201
 Standard Error of the Difference = 0.32851527
 Degree of Freedom = 55
 t = 0.611843706
 p = 0.2716
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ARSENIC - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	2.534	2.465	48	3.438	1.792	10

Calculated Difference = 0.904
 Standard Error of the Difference = 0.823742314
 Degree of Freedom = 56
 t = 1.097430573
 p = 0.1387
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

BARIUM - WETLAND SEDIMENT	
1	0.00
2	0.00
3	0.00
4	0.00
5	0.00
6	0.00
7	0.00
8	0.00
9	0.00
10	0.00
11	0.00
12	0.00
13	0.00
14	0.00
15	0.00
16	0.00
17	0.00
18	0.00
19	0.00
20	0.00
21	0.00
22	0.00
23	0.00
24	0.00
25	0.00
26	0.00
27	0.00
28	0.00
29	0.00
30	0.00
31	0.00
32	0.00
33	0.00
34	0.00
35	0.00
36	0.00
37	0.00
38	0.00
39	0.00
40	0.00
41	0.00
42	0.00
43	0.00
44	0.00
45	0.00
46	0.00
47	0.00
48	0.00
49	0.00
50	0.00
51	0.00
52	0.00
53	0.00
54	0.00
55	0.00
56	0.00
57	0.00
58	0.00
59	0.00
60	0.00
61	0.00
62	0.00
63	0.00
64	0.00
65	0.00
66	0.00
67	0.00
68	0.00
69	0.00
70	0.00
71	0.00
72	0.00
73	0.00
74	0.00
75	0.00
76	0.00
77	0.00
78	0.00
79	0.00
80	0.00
81	0.00
82	0.00
83	0.00
84	0.00
85	0.00
86	0.00
87	0.00
88	0.00
89	0.00
90	0.00
91	0.00
92	0.00
93	0.00
94	0.00
95	0.00
96	0.00
97	0.00
98	0.00
99	0.00
100	0.00

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	151.7	136.5	48	333.1	288.1	10

Calculated Difference =	181.4	
Standard Error of the Difference =	96.93387285	
Degree of Freedom =	56	
t =	1.871378855	
p =	0.0333	calculated at www.stat.tamu.edu/~west/applets/tdemo.html
Data sets significantly different =	Yes	site surface soil mean is statistically less than background mean

CADMIUM - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.103	0.146	48	0.0311	0.0398	10

Calculated Difference = 0.0719
 Standard Error of the Difference = 0.037580399
 Degree of Freedom = 56
 t = 1.913231441
 p = 0.0304
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically greater than background mean

CHROMIUM - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	15.07	5.536	48	15.2	3.02	10

Calculated Difference = 0.13
 Standard Error of the Difference = 1.647671726
 Degree of Freedom = 56
 t = 0.078899211
 p = 0.4687
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

COPPER - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	14.49	8.49	48	12.12	3.955	10

Calculated Difference = 2.37
 Standard Error of the Difference = 2.409192475
 Degree of Freedom = 56
 t = 0.983732111
 p = 0.1647
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LEAD - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	25.36	34.13	48	13.43	1.547	10

Calculated Difference = 11.93
 Standard Error of the Difference = 8.292183972
 Degree of Freedom = 56
 t = 1.438704211
 p = 0.0779
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically greater than background mean

LITHIUM - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	18.65	3.754	48	21.14	5.166	10

Calculated Difference = 2.49
 Standard Error of the Difference = 1.870221145
 Degree of Freedom = 56
 t = 1.331393353
 p = 0.0943
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

MANGANESE - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	331.8	205.9	48	377.4	93.75	10

Calculated Difference = 45.6
 Standard Error of the Difference = 58.07511173
 Degree of Freedom = 56
 t = 0.785190052
 p = 0.2178
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically less than background mean

MERCURY - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Mercury	0.0199	0.0194	48	0.0213	0.00479	10

Calculated Difference = 0.0014
 Standard Error of the Difference = 0.004942998
 Degree of Freedom = 56
 t = 0.283228898
 p = 0.3890
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically less than background mean

MOLYBDENUM - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.581	0.677	48	0.522	0.0739	10

Calculated Difference = 0.059
 Standard Error of the Difference = 0.16585129
 Degree of Freedom = 56
 t = 0.355740374
 p = 0.3617
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

ZINC - WETLAND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	139.1	160.9	53	247	364.6	10

Calculated Difference = 107.9
 Standard Error of the Difference = 121.7217613
 Degree of Freedom = 61
 t = 0.886447902
 p = 0.1896
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

ANTIMONY - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Antimony	0.795	0.618	8	0.953	0.878	10

Calculated Difference = 0.158
 Standard Error of the Difference = 0.31552261
 Degree of Freedom = 16
 t = 0.500756506
 p = 0.3116
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

ARSENIC - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Arsenic	1.735	2.233	8	3.438	1.792	10

Calculated Difference = 1.703
 Standard Error of the Difference = 0.783860649
 Degree of Freedom = 16
 t = 2.172580039
 p = 0.0226
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

BARIUM - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Barium	198.6	119.4	8	333.1	288.1	10

Calculated Difference = 134.5
 Standard Error of the Difference = 95.59691633
 Degree of Freedom = 16
 t = 1.406949148
 p = 0.0893
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is not statistically less than background mean

CADMIUM - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Cadmium	0.147	0.112	8	0.0311	0.0398	10

Calculated Difference = 0.1159
 Standard Error of the Difference = 0.029938042
 Degree of Freedom = 16
 t = 3.871328672
 p = 0.0007
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically greater than background mean

CHROMIUM - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Chromium	12.93	4.611	8	15.2	3.02	10

Calculated Difference =	2.27	
Standard Error of the Difference =	1.470614137	
Degree of Freedom =	16	
t =	1.543572812	
p =	0.0711	calculated at www.stat.tamu.edu/~west/applets/tdemo.html
Data sets significantly different =	No	site soil mean is not statistically less than background mean

COPPER - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Copper	15.2	7.421	8	12.12	3.955	10

Calculated Difference = 3.08
 Standard Error of the Difference = 2.191731568
 Degree of Freedom = 16
 t = 1.40528158
 p = 0.0896
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

LEAD - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lead	17.54	7.076	8	13.43	1.547	10

Calculated Difference = 4.11
 Standard Error of the Difference = 1.784545276
 Degree of Freedom = 16
 t = 2.303107719
 p = 0.0175
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is statistically greater than background mean

LITHIUM - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Lithium	18.48	4.071	8	21.14	5.166	10

Calculated Difference = 2.66
 Standard Error of the Difference = 1.908832199
 Degree of Freedom = 16
 t = 1.393522176
 p = 0.0912
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically less than background mean

MANGANESE - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Manganese	487.6	124.2	8	377.4	93.75	10

Calculated Difference = 110.2
 Standard Error of the Difference = 42.26460503
 Degree of Freedom = 16
 t = 2.607382701
 p = 0.0095
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site surface soil mean is statistically greater than background mean

MOLYBDENUM - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Molybdenum	0.146	0.191	8	0.522	0.0739	10

Calculated Difference = 0.376
 Standard Error of the Difference = 0.051885086
 Degree of Freedom = 16
 t = 7.24678375
 p = 0.0000
 Data sets significantly different = Yes

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is statistically less than background mean

ZINC - POND SEDIMENT

Compound	Site Conc. Mean	Site Conc. Standard Deviation	Number of Site Samples	Background Conc. Mean	Background Conc. Standard Deviation	Number of Background Samples
Zinc	332.3	407.7	8	247	364.6	10

Calculated Difference = 85.3
 Standard Error of the Difference = 151.8911495
 Degree of Freedom = 16
 t = 0.561586375
 p = 0.2910
 Data sets significantly different = No

calculated at www.stat.tamu.edu/~west/applets/tdemo.html
 site soil mean is not statistically greater than background mean

TABLE C-1
EXPOSURE POINT CONCENTRATION (mg/kg)
SOIL SOUTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0698		0.341	97.5% Chebyshev
4,4-DDD	0.00766		0.0498	97.5% Chebyshev
4,4'-DDE	0.0017		0.0054	97.5% Chebyshev
4,4'-DDT	0.0037		0.0125	99% Chebyshev
Acenaphthene	0.0419		0.115	97.5% Chebyshev
Acenaphthylene	0.042		0.114	97.5% Chebyshev
Anthracene	0.0874		0.21	97.5% Chebyshev
Aroclor-1254	0.205		0.74	97.5% Chebyshev
Benzo(a)anthracene	0.268		0.859	99% Chebyshev
Benzo(a)pyrene	0.347		1.008	99% Chebyshev
Benzo(b)fluoranthene	0.466		1.256	99% Chebyshev
Benzo(g,h,i)perylene	0.251		0.545	97.5% Chebyshev
Benzo(k)fluoranthene	0.157		0.378	97.5% Chebyshev
Boron	4.811		7.387	97.5% Chebyshev
Chrysene	0.327		0.938	99% Chebyshev
Cobalt	4.144		4.407	95% Student's-t
Copper	24.26		46.92	97.5% Chebyshev
Dibenz(a,h)anthracene	0.113		0.236	97.5% Chebyshev
Dieldrin	9.01E-04		0.0021	97.5% Chebyshev
Endrin Aldehyde	0.0019		0.0055	97.5% Chebyshev
Endrin Ketone	0.0013		0.0029	97.5% Chebyshev
Fluoranthene	0.594		1.886	99% Chebyshev
Fluorene	0.0442		0.107	97.5% Chebyshev
gamma-Chlordane	6.90E-04		0.0017	97.5% Chebyshev
Indeno(1,2,3-cd)pyrene	0.368		0.761	97.5% Chebyshev
Lead	53.52		104	97.5% Chebyshev
Molybdenum	0.89		1.61	97.5% Chebyshev
Naphthalene	0.323		2.775	99% Chebyshev
Nickel	11.74		12.37	95% Student's-t
Phenanthrene	0.401		1.349	99% Chebyshev
Pyrene	0.432		1.29	99% Chebyshev
Strontium	75.61		100.6	95% Chebyshev
Titanium	25.77		32.21	95% Student's-t
Vanadium	14.4		15.17	95% Approx. Gamma
Zinc	433.8		815.2	97.5% Chebyshev
LPAH	1.0093		5.011	
HPAH	3.323		9.157	
TOTAL PAHs	4.3323		14.168	

TABLE C-2
EXPOSURE POINT CONCENTRATION (mg/kg)
SURFACE SOIL SOUTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0293		0.0784	97.5% Chebyshev
4,4-DDD	7.89E-04		0.0029	97.5% Chebyshev
4,4'-DDE	0.0019		0.0074	97.5% Chebyshev
4,4'-DDT	0.0038		0.014	99% Chebyshev
Acenaphthene	0.0595		0.197	97.5% Chebyshev
Acenaphthylene	0.0382		0.113	97.5% Chebyshev
Anthracene	0.0961		0.297	97.5% Chebyshev
Aroclor-1254	0.137		0.726	97.5% Chebyshev
Benzo(a)anthracene	0.345		1.211	97.5% Chebyshev
Benzo(a)pyrene	0.457		1.457	97.5% Chebyshev
Benzo(b)fluoranthene	0.582		1.638	97.5% Chebyshev
Benzo(g,h,i)perylene	0.324		1.095	97.5% Chebyshev
Benzo(k)fluoranthene	0.24		0.651	97.5% Chebyshev
Boron	4.662		9.663	97.5% Chebyshev
Chrysene	0.409		1.322	99% Chebyshev
Cobalt	3.705		4.781	95% Chebyshev
Copper	27.98		32.45	95% H-UCL
Dibenz(a,h)anthracene	0.155		0.363	97.5% Chebyshev
Dieldrin	9.97E-04		0.003	97.5% Chebyshev
Endrin Aldehyde	0.0023		0.0084	97.5% Chebyshev
Endrin Ketone	0.0016		0.004	97.5% Chebyshev
Fluoranthene	0.799		2.656	97.5% H-UCL
Fluorene	0.0515		0.155	97.5% Chebyshev
gamma-Chlordane	8.27E-04		0.0025	97.5% Chebyshev
Indeno(1,2,3-cd)pyrene	0.47		1.115	97.5% Chebyshev
Lead	69.61		84.5	95% H-UCL
Molybdenum	1.306		1.645	95% Approx. Gamma
Naphthalene				NS
Nickel	11.64		12.54	95% Approx. Gamma
Phenanthrene	0.512		2.198	97.5% Chebyshev
Pyrene	0.533		1.366	95% H-UCL
Strontium	70.61		101.2	95% Chebyshev
Titanium	29.8		63	95% Chebyshev
Vanadium	13.76		14.84	95% Approx. Gamma
Zinc	601.2		727.7	95% Approx. Gamma
LPAH	0.7866		3.0384	
HPAH	4.314		12.874	
TOTAL PAHs	5.1006		15.9124	

Notes:

NS - Not sampled in surface soil.

TABLE C-3
TOXICITY VALUES

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
2-Methylnaphthalene																		
4,4-DDD	0.043	EPA, 2007a	Acute median LC50 in common cricket (dose 4.3 with uncertainty factor of 0.01)	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227		Avian TRV was used as a surrogate for the rat snake since no TRV was found specific for reptiles.	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
4,4'-DDE	0.043	EPA, 2007a	Acute median LC50 in common cricket (dose 4.3 with uncertainty factor of 0.01)	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227		Avian TRV was used as a surrogate for the rat snake since no TRV was found specific for reptiles.	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
4,4'-DDT	0.043	EPA, 2007a	Acute median LC50 in common cricket (dose 4.3 with uncertainty factor of 0.01)	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227		Avian TRV was used as a surrogate for the rat snake since no TRV was found specific for reptiles.	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Acenaphthene																		
Acenaphthylene																		
Anthracene																		
Aroclor-1254	2.51	EPA, 1999	Acute median LC50 in earthworms (dose 251 with uncertainty factor of 0.01)	0.155	Sample, 1996	Chronic LOAEL for reproduction in mouse with an uncertainty factor of 0.1	0.155	Sample, 1996	Chronic LOAEL for reproduction in mouse with an uncertainty factor of 0.1	0.18		Avian TRV	0.18	Sample, 1996		0.18	Sample, 1996	
Benzo(a)anthracene																		
Benzo(a)pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,i)perylene																		
Benzo(k)fluoranthene																		
Boron																		
Chrysene																		
Cobalt																		
Copper	80	EPA, 2007c	Geometric mean of the MATC and EC10 values for six test species under different test species	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05		Avian TRV	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Dibenz(a,h)anthracene																		
Dieldrin				0.015	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.015	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.0709		Avian TRV	0.0709	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.0709	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth, and survival
Endrin Aldehyde				0.092	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.092	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.01	Sample, 1996	Avian TRV	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1
Endrin Ketone				0.092	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.092	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.01	Sample, 1996	Avian TRV	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1
Fluoranthene																		
Fluorene																		
gamma-Chlordane				4.6	Sample, 1996	Chronic NOAEL in mouse	4.6	Sample, 1996	Chronic NOAEL in mouse	2.14		Avian TRV	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird
Indeno(1,2,3-cd)pyrene																		
Lead	1700	EPA, 2005e	Geometric mean of MATC values for one test species under different pH	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63		Avian TRV	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Molybdenum																		
Naphthalene																		

TOXICITY VALUES

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
Nickel	280	EPA, 2007d	Geometric mean of MATC values for five species under different test conditions	1.7	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.7	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71		Avian TRV	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Phenanthrene																		
Pyrene																		
Strontium																		
Titanium																		
Vanadium	100	EPA, 2005d	LOAEC/NOAEC for growth in broccoli -- used as a surrogate for invertebrates	4.16	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.16	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.344		Avian TRV	0.344	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.344	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Zinc	120	EPA, 2007e	Geometric mean of the MATC and EC10 values for three test species under different test species	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	66.1		Avian TRV	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups
LPAH	29	EPA, 2007b		65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6		Mammalian TRV	65.6		Mammalian TRV	65.6		Mammalian TRV
HPAH	18	EPA, 2007b		0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615		Mammalian TRV	0.615		Mammalian TRV	0.615		Mammalian TRV
TOTAL PAHs																		

Notes:

- EPA, 2007a -- DDT
- EPA, 2007b -- PAHs
- EPA, 2007c -- Copper
- EPA, 2007d -- Nickel
- EPA, 2007e -- Zinc
- EPA, 2007f -- Selenium
- EPA, 2005a -- Antimony
- EPA, 2005b -- Cadmium
- EPA, 2005c -- Chromium
- EPA, 2005d -- Vanadium
- EPA, 2005e -- Lead
- EPA, 2005f -- Dieldrin
- EPA, 2005g -- Barium

TABLE C-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
EARTHWORM

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
2-Methylnaphthalene	6.98E-02	3.41E-01			
4,4-DDD	7.66E-03	4.98E-02	4.30E-02	1.78E-01	1.16E+00
4,4'-DDE	1.70E-03	5.40E-03	4.30E-02	3.95E-02	1.26E-01
4,4'-DDT	3.70E-03	1.25E-02	4.30E-02	8.60E-02	2.91E-01
Acenaphthene	4.19E-02	1.15E-01			
Acenaphthylene	4.20E-02	1.14E-01			
Anthracene	8.74E-02	2.10E-01			
Aroclor-1254	2.05E-01	7.40E-01	2.51E+00	8.17E-02	2.95E-01
Benzo(a)anthracene	2.68E-01	8.59E-01			
Benzo(a)pyrene	3.47E-01	1.01E+00			
Benzo(b)fluoranthene	4.66E-01	1.26E+00			
Benzo(g,h,i)perylene	2.51E-01	5.45E-01			
Benzo(k)fluoranthene	1.57E-01	3.78E-01			
Boron	4.81E+00	7.39E+00			
Chrysene	3.27E-01	9.38E-01			
Cobalt	4.14E+00	4.41E+00			
Copper	2.43E+01	4.69E+01	8.00E+01	3.03E-01	5.87E-01
Dibenz(a,h)anthracene	1.13E-01	2.36E-01			
Dieldrin	9.01E-04	2.10E-03			
Endrin Aldehyde	1.90E-03	5.50E-03			
Endrin Ketone	1.30E-03	2.90E-03			
Fluoranthene	5.94E-01	1.89E+00			
Fluorene	4.42E-02	1.07E-01			
gamma-Chlordane	6.90E-04	1.70E-03			
Indeno(1,2,3-cd)pyrene	3.68E-01	7.61E-01			
Lead	5.35E+01	1.04E+02	1.70E+03	3.15E-02	6.12E-02
Molybdenum	8.90E-01	1.61E+00			
Naphthalene	3.23E-01	2.78E+00			
Nickel	1.17E+01	1.24E+01	2.80E+02	4.19E-02	4.42E-02
Phenanthrene	4.01E-01	1.35E+00			
Pyrene	4.32E-01	1.29E+00			
Strontium	7.56E+01	1.01E+02			
Titanium	2.58E+01	3.22E+01			
Vanadium	1.44E+01	1.52E+01	1.00E+02	1.44E-01	1.52E-01
Zinc	4.34E+02	8.15E+02	1.20E+02	3.62E+00	6.79E+00
LPAH	1.01E+00	5.01E+00	2.90E+01	3.48E-02	1.73E-01
HPAH	3.32E+00	9.16E+00	1.80E+01	1.85E-01	5.09E-01
TOTAL PAHs	4.33E+00	1.42E+01			

TABLE C-5
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE

SOIL INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Soil concentration (mg/kg)	see data page		
IR	Ingestion rate of soil (kg/day)	2.13E-05	EPA, 1999 (normalized for bw)	
AF	Chemical Bioavailability in soil (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	1.48E-02	EPA, 1999	

Chemical	Average Sc	RME Sc	Average Intake	RME Intake
2-Methylnaphthalene	6.98E-02	3.41E-01	1.00E-04	4.91E-04
4,4-DDD	7.66E-03	4.98E-02	1.10E-05	7.17E-05
4,4'-DDE	1.70E-03	5.40E-03	2.45E-06	7.77E-06
4,4'-DDT	3.70E-03	1.25E-02	5.33E-06	1.80E-05
Acenaphthene	4.19E-02	1.15E-01	6.03E-05	1.66E-04
Acenaphthylene	4.20E-02	1.14E-01	6.04E-05	1.64E-04
Anthracene	8.74E-02	2.10E-01	1.26E-04	3.02E-04
Aroclor-1254	2.05E-01	7.40E-01	2.95E-04	1.07E-03
Benzo(a)anthracene	2.68E-01	8.59E-01	3.86E-04	1.24E-03
Benzo(a)pyrene	3.47E-01	1.01E+00	4.99E-04	1.45E-03
Benzo(b)fluoranthene	4.66E-01	1.26E+00	6.71E-04	1.81E-03
Benzo(g,h,i)perylene	2.51E-01	5.45E-01	3.61E-04	7.84E-04
Benzo(k)fluoranthene	1.57E-01	3.78E-01	2.26E-04	5.44E-04
Boron	4.81E+00	7.39E+00	6.92E-03	1.06E-02
Chrysene	3.27E-01	9.38E-01	4.71E-04	1.35E-03
Cobalt	4.14E+00	4.41E+00	5.96E-03	6.34E-03
Copper	2.43E+01	4.69E+01	3.49E-02	6.75E-02
Dibenz(a,h)anthracene	1.13E-01	2.36E-01	1.63E-04	3.40E-04
Dieldrin	9.01E-04	2.10E-03	1.30E-06	3.02E-06
Endrin Aldehyde	1.90E-03	5.50E-03	2.73E-06	7.92E-06
Endrin Ketone	1.30E-03	2.90E-03	1.87E-06	4.17E-06
Fluoranthene	5.94E-01	1.89E+00	8.55E-04	2.71E-03
Fluorene	4.42E-02	1.07E-01	6.36E-05	1.54E-04
gamma-Chlordane	6.90E-04	1.70E-03	9.94E-07	2.45E-06
Indeno(1,2,3-cd)pyrene	3.68E-01	7.61E-01	5.30E-04	1.10E-03
Lead	5.35E+01	1.04E+02	7.70E-02	1.50E-01
Molybdenum	8.90E-01	1.61E+00	1.28E-03	2.32E-03
Naphthalene	3.23E-01	2.78E+00	4.65E-04	3.99E-03
Nickel	1.17E+01	1.24E+01	1.69E-02	1.78E-02
Phenanthrene	4.01E-01	1.35E+00	5.77E-04	1.94E-03
Pyrene	4.32E-01	1.29E+00	6.22E-04	1.86E-03
Strontium	7.56E+01	1.01E+02	1.09E-01	1.45E-01
Titanium	2.58E+01	3.22E+01	3.71E-02	4.64E-02
Vanadium	1.44E+01	1.52E+01	2.07E-02	2.18E-02
Zinc	4.34E+02	8.15E+02	6.24E-01	1.17E+00
LPAH	1.01E+00	5.01E+00	1.45E-03	7.21E-03
HPAH	3.32E+00	9.16E+00	4.78E-03	1.32E-02
TOTAL PAHs	4.33E+00	1.42E+01	6.23E-03	2.04E-02

FOOD INGESTION				
INTAKE = ((Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs * AUF)/(BW))				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ca	Arthropod concentration (mg/kg)	see FoodConc page		
Cp	Plant concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	8.87E-03	EPA, 1999 (normalized for bw)	
Dfa	Dietary fraction of arthropods (unitless)	5.60E-01	EPA, 1993	

**TABLE C-5
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE**

Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)				4.40E-01	EPA, 1993
AUF	Area Use Factor				1	EPA, 1997
BW	Body weight (kg)				1.48E-02	EPA, 1999

Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4-DDD	9.65E-03	6.27E-02	7.18E-05	4.67E-04	3.26E-03	2.12E-02
4,4'-DDE	2.14E-03	6.80E-03	1.59E-05	5.06E-05	7.23E-04	2.30E-03
4,4'-DDT	4.66E-03	1.58E-02	3.47E-05	1.17E-04	1.57E-03	5.32E-03
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	2.32E-01	8.36E-01	2.05E-03	7.40E-03	7.83E-02	2.83E-01
Benzo(a)anthracene	8.04E-03	2.58E-02	5.41E-03	1.74E-02	4.13E-03	1.32E-02
Benzo(a)pyrene	2.43E-02	7.06E-02	3.50E-03	1.02E-02	9.08E-03	2.64E-02
Benzo(b)fluoranthene	3.26E-02	8.79E-02	4.71E-03	1.27E-02	1.22E-02	3.29E-02
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.26E-02	3.02E-02	1.59E-03	3.82E-03	4.63E-03	1.12E-02
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	1.31E-02	3.75E-02	6.11E-03	1.75E-02	6.00E-03	1.72E-02
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	9.70E-01	1.88E+00	9.70E+00	1.88E+01	2.88E+00	5.58E+00
Dibenz(a,h)anthracene	7.91E-03	1.65E-02	7.23E-04	1.51E-03	2.85E-03	5.94E-03
Dieldrin	1.32E-02	3.09E-02	3.14E-05	7.33E-05	4.45E-03	1.04E-02
Endrin Aldehyde	0.00E+00	0.00E+00	1.09E-04	3.17E-04	2.89E-05	8.35E-05
Endrin Ketone	0.00E+00	0.00E+00	7.49E-05	1.67E-04	1.97E-05	4.40E-05
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
gamma-Chlordane	0.00E+00	0.00E+00	9.87E-06	2.43E-05	2.60E-06	6.41E-06
Indeno(1,2,3-cd)pyrene	2.94E-02	6.09E-02	1.44E-03	2.97E-03	1.03E-02	2.12E-02
Lead	1.61E+00	3.12E+00	2.41E+00	4.68E+00	1.17E+00	2.28E+00
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	2.35E-01	2.47E-01	3.76E-01	3.96E-01	1.78E-01	1.87E-01
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xylene (total)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	2.43E+02	4.57E+02	5.21E-10	9.78E-10	8.15E+01	1.53E+02
LPAH	7.07E-02	3.51E-01	2.04E-02	1.01E-01	2.91E-02	1.44E-01
HPAH	2.33E-01	6.41E-01	6.71E-02	1.85E-01	9.58E-02	2.64E-01
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL INTAKE						
INTAKE = Soil Intake + Food Intake						

Chemical	TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene	1.00E-04	4.91E-04
4,4-DDD	3.27E-03	2.13E-02
4,4'-DDE	7.26E-04	2.30E-03
4,4'-DDT	1.58E-03	5.33E-03
Acenaphthene	6.03E-05	1.66E-04
Acenaphthylene	6.04E-05	1.64E-04
Anthracene	1.26E-04	3.02E-04
Aroclor-1254	7.86E-02	2.84E-01
Benzo(a)anthracene	4.51E-03	1.45E-02

TABLE C-5
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE

Benzo(a)pyrene	9.58E-03	2.78E-02
Benzo(b)fluoranthene	1.29E-02	3.47E-02
Benzo(g,h,i)perylene	3.61E-04	7.84E-04
Benzo(k)fluoranthene	4.86E-03	1.17E-02
Boron	6.92E-03	1.06E-02
Chrysene	6.47E-03	1.86E-02
Cobalt	5.96E-03	6.34E-03
Copper	2.92E+00	5.65E+00
Dibenz(a,h)anthracene	3.01E-03	6.28E-03
Dieldrin	4.45E-03	1.04E-02
Endrin Aldehyde	3.16E-05	9.15E-05
Endrin Ketone	2.16E-05	4.82E-05
Fluoranthene	8.55E-04	2.71E-03
Fluorene	6.36E-05	1.54E-04
gamma-Chlordane	3.60E-06	8.86E-06
Indeno(1,2,3-cd)pyrene	1.08E-02	2.23E-02
Lead	1.25E+00	2.43E+00
Molybdenum	1.28E-03	2.32E-03
Naphthalene	4.65E-04	3.99E-03
Nickel	1.95E-01	2.05E-01
Phenanthrene	5.77E-04	1.94E-03
Pyrene	6.22E-04	1.86E-03
Strontium	1.09E-01	1.45E-01
Titanium	3.71E-02	4.64E-02
Vanadium	2.07E-02	2.18E-02
Zinc	8.22E+01	1.54E+02
LPAH	3.05E-02	1.52E-01
HPAH	1.01E-01	2.77E-01
TOTAL PAHs	1.31E-01	4.29E-01

TABLE C-6
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
COYOTE

FOOD INGESTION						
$\text{INTAKE} = ((\text{Cm} * \text{IR} * \text{Dfm} * \text{AUF}) / (\text{BW})) + (\text{Cb} * \text{IR} * \text{DFb} * \text{AUF}) / (\text{BW}))$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
DFb	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4-DDD	2.09E-04	1.36E-03	1.26E-04	8.17E-04	1.88E-05	1.22E-04
4,4'-DDE	4.64E-05	1.47E-04	2.79E-05	8.86E-05	4.17E-06	1.33E-05
4,4'-DDT	1.01E-04	3.41E-04	6.07E-05	2.05E-04	9.08E-06	3.07E-05
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	4.99E-03	1.80E-02	3.00E-03	1.08E-02	4.50E-04	1.62E-03
Benzo(a)anthracene	1.93E-03	6.19E-03	1.16E-03	3.72E-03	1.74E-04	5.57E-04
Benzo(a)pyrene	7.06E-03	2.05E-02	4.26E-03	1.24E-02	6.36E-04	1.85E-03
Benzo(b)fluoranthene	1.12E-02	3.02E-02	6.73E-03	1.81E-02	1.01E-03	2.72E-03
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	3.76E-03	9.06E-03	2.25E-03	5.42E-03	3.38E-04	8.15E-04
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	2.71E-03	7.78E-03	1.63E-03	4.69E-03	2.44E-04	7.00E-04
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dibenz(a,h)anthracene	6.01E-03	1.26E-02	3.63E-03	7.58E-03	5.42E-04	1.13E-03
Dieldrin	5.09E-06	1.19E-05	3.31E-06	7.73E-06	4.65E-07	1.08E-06
Endrin Aldehyde	4.50E-06	1.30E-05	2.95E-06	8.53E-06	4.11E-07	1.19E-06
Endrin Ketone	3.08E-06	6.87E-06	2.02E-06	4.50E-06	2.81E-07	6.28E-07
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
gamma-Chlordane	1.82E-05	4.47E-05	1.19E-05	2.92E-05	1.66E-06	4.08E-06
Indeno(1,2,3-cd)pyrene	4.57E-02	9.46E-02	2.75E-02	5.69E-02	4.12E-03	8.52E-03
Lead	9.66E-03	1.88E-02	0.00E+00	0.00E+00	7.24E-04	1.41E-03
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	4.24E-02	4.46E-02	0.00E+00	0.00E+00	3.18E-03	3.35E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	2.34E-02	4.40E-02	1.74E+00	3.27E+00	4.53E-02	8.51E-02
LPAH	5.37E-02	2.67E-01	3.24E-02	1.61E-01	4.84E-03	2.40E-02
HPAH	1.77E-01	4.87E-01	1.07E-01	2.94E-01	1.59E-02	4.39E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE C-7
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE**

SOIL INGESTION									
INTAKE = (Sc * IR * AF * AUF) / (BW)									
Parameter		Definition				Value		Reference	
Intake		Intake of chemical (mg/kg-day)				calculated			
Sc		Soil concentration (mg/kg)				see data page			
IR		Ingestion rate of soil (kg/day)				1.45E-04		EPA, 1993 *	
AF		Chemical Bioavailability in soil (unitless)				1		EPA, 1997	
AUF		Area Use Factor				1		EPA, 1997	
BW		Body weight (kg)				1.39E-01		EPA, 1993	
Chemical		Average Sc		RME Sc		Average Intake		RME Intake	
2-Methylnaphthalene		6.98E-02		3.41E-01		7.26E-05		3.55E-04	
4,4-DDD		7.66E-03		4.98E-02		7.97E-06		5.18E-05	
4,4'-DDE		1.70E-03		5.40E-03		1.77E-06		5.62E-06	
4,4'-DDT		3.70E-03		1.25E-02		3.85E-06		1.30E-05	
Acenaphthene		4.19E-02		1.15E-01		4.36E-05		1.20E-04	
Acenaphthylene		4.20E-02		1.14E-01		4.37E-05		1.19E-04	
Anthracene		8.74E-02		2.10E-01		9.09E-05		2.18E-04	
Aroclor-1254		2.05E-01		7.40E-01		2.13E-04		7.70E-04	
Benzo(a)anthracene		2.68E-01		8.59E-01		2.79E-04		8.93E-04	
Benzo(a)pyrene		3.47E-01		1.01E+00		3.61E-04		1.05E-03	
Benzo(b)fluoranthene		4.66E-01		1.26E+00		4.85E-04		1.31E-03	
Benzo(g,h,i)perylene		2.51E-01		5.45E-01		2.61E-04		5.67E-04	
Benzo(k)fluoranthene		1.57E-01		3.78E-01		1.63E-04		3.93E-04	
Boron		4.81E+00		7.39E+00		5.00E-03		7.68E-03	
Chrysene		3.27E-01		9.38E-01		3.40E-04		9.76E-04	
Cobalt		4.14E+00		4.41E+00		4.31E-03		4.58E-03	
Copper		2.43E+01		4.69E+01		2.52E-02		4.88E-02	
Dibenz(a,h)anthracene		1.13E-01		2.36E-01		1.18E-04		2.45E-04	
Dieldrin		9.01E-04		2.10E-03		9.37E-07		2.18E-06	
Endrin Aldehyde		1.90E-03		5.50E-03		1.98E-06		5.72E-06	
Endrin Ketone		1.30E-03		2.90E-03		1.35E-06		3.02E-06	
Fluoranthene		5.94E-01		1.89E+00		6.18E-04		1.96E-03	
Fluorene		4.42E-02		1.07E-01		4.60E-05		1.11E-04	
gamma-Chlordane		6.90E-04		1.70E-03		7.18E-07		1.77E-06	
Indeno(1,2,3-cd)pyrene		3.68E-01		7.61E-01		3.83E-04		7.91E-04	
Lead		5.35E+01		1.04E+02		5.57E-02		1.08E-01	
Molybdenum		8.90E-01		1.61E+00		9.26E-04		1.67E-03	
Naphthalene		3.23E-01		2.78E+00		3.36E-04		2.89E-03	
Nickel		1.17E+01		1.24E+01		1.22E-02		1.29E-02	
Phenanthrene		4.01E-01		1.35E+00		4.17E-04		1.40E-03	
Pyrene		4.32E-01		1.29E+00		4.49E-04		1.34E-03	
Strontium		7.56E+01		1.01E+02		7.86E-02		1.05E-01	
Titanium		2.58E+01		3.22E+01		2.68E-02		3.35E-02	
Vanadium		1.44E+01		1.52E+01		1.50E-02		1.58E-02	
Zinc		4.34E+02		8.15E+02		4.51E-01		8.48E-01	
LPAH		1.01E+00		5.01E+00		1.05E-03		5.21E-03	
HPAH		3.32E+00		9.16E+00		3.46E-03		9.52E-03	
TOTAL PAHs		4.33E+00		1.42E+01		4.51E-03		1.47E-02	
FOOD INGESTION									
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))									
Parameter		Definition				Value		Reference	
Intake		Intake of chemical (mg/kg-day)				calculated			
Cb		Bird concentration (mg/kg)				see FoodConc page			
Ca		Arthropod concentration (mg/kg)				see FoodConc page			
Cm		Mammal concentration (mg/kg)				see FoodConc page			
IR		Ingestion rate of of food (kg/day)				2.78E-03		EPA, 1993 (normalized for bw)	
Dfb		Dietary fraction of birds (unitless)				1.80E-01		EPA, 1993	
Dfa		Dietary fraction of arthropods (unitless)				2.00E-01		EPA, 1993	
Dfm		Dietary fraction of small mammals (unitless)				6.20E-01		EPA, 1993	
AUF		Area Use Factor				1		EPA, 1997	
BW		Body weight (kg)				1.39E-01		EPA, 1993	
Chemical	Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake	

**TABLE C-7
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE**

2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4-DDD	1.26E-04	8.17E-04	9.65E-03	6.27E-02	2.09E-04	1.36E-03	4.16E-05	2.71E-04
4,4'-DDE	2.79E-05	8.86E-05	2.14E-03	6.80E-03	4.64E-05	1.47E-04	9.24E-06	2.94E-05
4,4'-DDT	6.07E-05	2.05E-04	4.66E-03	1.58E-02	1.01E-04	3.41E-04	2.01E-05	6.80E-05
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	3.00E-03	1.08E-02	2.32E-01	8.36E-01	4.99E-03	1.80E-02	9.99E-04	3.61E-03
Benzo(a)anthracene	1.16E-03	3.72E-03	8.04E-03	2.58E-02	1.93E-03	6.19E-03	6.03E-05	1.93E-04
Benzo(a)pyrene	4.26E-03	1.24E-02	2.43E-02	7.06E-02	7.06E-03	2.05E-02	2.00E-04	5.81E-04
Benzo(b)fluoranthene	6.73E-03	1.81E-02	3.26E-02	8.79E-02	1.12E-02	3.02E-02	2.94E-04	7.92E-04
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	2.25E-03	5.42E-03	1.26E-02	3.02E-02	3.76E-03	9.06E-03	1.05E-04	2.53E-04
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	1.63E-03	4.69E-03	1.31E-02	3.75E-02	2.71E-03	7.78E-03	9.18E-05	2.63E-04
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	9.70E-01	1.88E+00	0.00E+00	0.00E+00	3.88E-03	7.51E-03
Dibenz(a,h)anthracene	3.63E-03	7.58E-03	7.91E-03	1.65E-02	6.01E-03	1.26E-02	1.19E-04	2.49E-04
Dieldrin	3.31E-06	7.73E-06	1.32E-02	3.09E-02	5.09E-06	1.19E-05	5.30E-05	1.24E-04
Endrin Aldehyde	2.95E-06	8.53E-06	0.00E+00	0.00E+00	4.50E-06	1.30E-05	6.64E-08	1.92E-07
Endrin Ketone	2.02E-06	4.50E-06	0.00E+00	0.00E+00	3.08E-06	6.87E-06	4.55E-08	1.01E-07
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
gamma-Chlordane	1.19E-05	2.92E-05	0.00E+00	0.00E+00	1.82E-05	4.47E-05	2.68E-07	6.60E-07
Indeno(1,2,3-cd)pyrene	2.75E-02	5.69E-02	2.94E-02	6.09E-02	4.57E-02	9.46E-02	7.84E-04	1.62E-03
Lead	0.00E+00	0.00E+00	1.61E+00	3.12E+00	9.66E-03	1.88E-02	6.54E-03	1.27E-02
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	0.00E+00	0.00E+00	2.35E-01	2.47E-01	4.24E-02	4.46E-02	1.46E-03	1.54E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	1.74E+00	3.27E+00	2.43E+02	4.57E+02	2.34E-02	4.40E-02	9.78E-01	1.84E+00
LPAH	3.24E-02	1.61E-01	7.07E-02	3.51E-01	5.37E-02	2.67E-01	1.07E-03	5.29E-03
HPAH	1.07E-01	2.94E-01	2.33E-01	6.41E-01	1.77E-01	4.87E-01	3.51E-03	9.67E-03
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical							TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene							7.26E-05	3.55E-04
4,4-DDD							4.96E-05	3.23E-04
4,4'-DDE							1.10E-05	3.50E-05
4,4'-DDT							2.40E-05	8.10E-05
Acenaphthene							4.36E-05	1.20E-04
Acenaphthylene							4.37E-05	1.19E-04
Anthracene							9.09E-05	2.18E-04
Aroclor-1254							1.21E-03	4.38E-03
Benzo(a)anthracene							3.39E-04	1.09E-03
Benzo(a)pyrene							5.61E-04	1.63E-03
Benzo(b)fluoranthene							7.78E-04	2.10E-03
Benzo(g,h,i)perylene							2.61E-04	5.67E-04
Benzo(k)fluoranthene							2.68E-04	6.46E-04
Boron							5.00E-03	7.68E-03
Chrysene							4.32E-04	1.24E-03
Cobalt							4.31E-03	4.58E-03
Copper							2.91E-02	5.63E-02
Dibenz(a,h)anthracene							2.37E-04	4.95E-04
Dieldrin							5.40E-05	1.26E-04
Endrin Aldehyde							2.04E-06	5.91E-06
Endrin Ketone							1.40E-06	3.12E-06
Fluoranthene							6.18E-04	1.96E-03
Fluorene							4.60E-05	1.11E-04
gamma-Chlordane							9.86E-07	2.43E-06
Indeno(1,2,3-cd)pyrene							1.17E-03	2.41E-03
Lead							6.22E-02	1.21E-01

TABLE C-7
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE

Molybdenum	9.26E-04	1.67E-03
Naphthalene	3.36E-04	2.89E-03
Nickel	1.37E-02	1.44E-02
Phenanthrene	4.17E-04	1.40E-03
Pyrene	4.49E-04	1.34E-03
Strontium	7.86E-02	1.05E-01
Titanium	2.68E-02	3.35E-02
Vanadium	1.50E-02	1.58E-02
Zinc	1.43E+00	2.69E+00
LPAH	2.12E-03	1.05E-02
HPAH	6.96E-03	1.92E-02
TOTAL PAHs	9.08E-03	2.97E-02

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

**TABLE C-8
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Sc	Soil concentration (mg/kg)	see data page						
IR	Ingestion rate of soil (kg/day)	1.14E-03		EPA, 1999 (normalized for bw)				
AF	Chemical Bioavailability in soil (unitless)	1		EPA, 1997				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	8.00E-02		EPA, 1999				
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
2-Methylnaphthalene	2.93E-02	7.84E-02	4.18E-04	1.12E-03				
4,4-DDD	7.89E-04	2.90E-03	1.12E-05	4.13E-05				
4,4'-DDE	1.90E-03	7.40E-03	2.71E-05	1.05E-04				
4,4'-DDT	3.80E-03	1.40E-02	5.42E-05	2.00E-04				
Acenaphthene	5.95E-02	1.97E-01	8.48E-04	2.81E-03				
Acenaphthylene	3.82E-02	1.13E-01	5.44E-04	1.61E-03				
Anthracene	9.61E-02	2.97E-01	1.37E-03	4.23E-03				
Aroclor-1254	1.37E-01	7.26E-01	1.95E-03	1.03E-02				
Benzo(a)anthracene	3.45E-01	1.21E+00	4.92E-03	1.73E-02				
Benzo(a)pyrene	4.57E-01	1.46E+00	6.51E-03	2.08E-02				
Benzo(b)fluoranthene	5.82E-01	1.64E+00	8.29E-03	2.33E-02				
Benzo(g,h,i)perylene	3.24E-01	1.10E+00	4.62E-03	1.56E-02				
Benzo(k)fluoranthene	2.40E-01	6.51E-01	3.42E-03	9.28E-03				
Boron	4.66E+00	9.66E+00	6.64E-02	1.38E-01				
Chrysene	4.09E-01	1.32E+00	5.83E-03	1.88E-02				
Cobalt	3.71E+00	4.78E+00	5.28E-02	6.81E-02				
Copper	2.80E+01	3.25E+01	3.99E-01	4.62E-01				
Dibenz(a,h)anthracene	1.55E-01	3.63E-01	2.21E-03	5.17E-03				
Dieldrin	9.97E-04	3.00E-03	1.42E-05	4.28E-05				
Endrin Aldehyde	2.30E-03	8.40E-03	3.28E-05	1.20E-04				
Endrin Ketone	1.60E-03	4.00E-03	2.28E-05	5.70E-05				
Fluoranthene	7.99E-01	2.66E+00	1.14E-02	3.78E-02				
Fluorene	5.15E-02	1.55E-01	7.34E-04	2.21E-03				
gamma-Chlordane	8.27E-04	2.50E-03	1.18E-05	3.56E-05				
Indeno(1,2,3-cd)pyrene	4.70E-01	1.12E+00	6.70E-03	1.59E-02				
Lead	6.96E+01	8.45E+01	9.92E-01	1.20E+00				
Molybdenum	1.31E+00	1.65E+00	1.86E-02	2.34E-02				
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Nickel	1.16E+01	1.25E+01	1.66E-01	1.79E-01				
Phenanthrene	5.12E-01	2.20E+00	7.30E-03	3.13E-02				
Pyrene	5.33E-01	1.37E+00	7.60E-03	1.95E-02				
Strontium	7.06E+01	1.01E+02	1.01E+00	1.44E+00				
Titanium	2.98E+01	6.30E+01	4.25E-01	8.98E-01				
Vanadium	1.38E+01	1.48E+01	1.96E-01	2.11E-01				
Zinc	6.01E+02	7.28E+02	8.57E+00	1.04E+01				
LPAH	7.87E-01	3.04E+00	1.12E-02	4.33E-02				
HPAH	4.31E+00	1.29E+01	6.15E-02	1.83E-01				
TOTAL PAHs	5.10E+00	1.59E+01	7.27E-02	2.27E-01				
FOOD INGESTION								
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * Dfa * AUF) / (BW) + ((Cp * IR * Dfs *AUF)/(BW))								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Ce	Earthworm concentration (mg/kg)	see FoodConc page						
Ca	Arthropod concentration (mg/kg)	see FoodConc page						
Cp	Plant concentration (mg/kg)	see FoodConc page						
IR	Ingestion rate of of food (kg/day)	3.52E-02		EPA, 1999 (normalized for bw)				
Dfe	Dietary fraction of earthworms (unitless)	4.60E-01		EPA, 1993				
Dfa	Dietary fraction of arthropods (unitless)	4.60E-01		EPA, 1993				
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)	8.00E-02		EPA, 1993				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	8.00E-02		EPA, 1999				
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake

**TABLE C-8
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN**

2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4-DDD	9.65E-03	6.27E-02	9.65E-03	6.27E-02	7.18E-05	4.67E-04	3.91E-03	2.54E-02
4,4'-DDE	2.14E-03	6.80E-03	2.14E-03	6.80E-03	1.59E-05	5.06E-05	8.68E-04	2.76E-03
4,4'-DDT	4.66E-03	1.58E-02	4.66E-03	1.58E-02	3.47E-05	1.17E-04	1.89E-03	6.38E-03
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	2.32E-01	8.36E-01	2.32E-01	8.36E-01	2.05E-03	7.40E-03	9.38E-02	3.39E-01
Benzo(a)anthracene	8.04E-03	2.58E-02	8.04E-03	2.58E-02	5.41E-03	1.74E-02	3.45E-03	1.10E-02
Benzo(a)pyrene	2.43E-02	7.06E-02	2.43E-02	7.06E-02	3.50E-03	1.02E-02	9.96E-03	2.89E-02
Benzo(b)fluoranthene	3.26E-02	8.79E-02	3.26E-02	8.79E-02	4.71E-03	1.27E-02	1.34E-02	3.60E-02
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.26E-02	3.02E-02	1.26E-02	3.02E-02	1.59E-03	3.82E-03	5.14E-03	1.24E-02
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	1.31E-02	3.75E-02	1.31E-02	3.75E-02	6.11E-03	1.75E-02	5.51E-03	1.58E-02
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	9.70E-01	1.88E+00	9.70E-01	1.88E+00	9.70E+00	1.88E+01	7.34E-01	1.42E+00
Dibenz(a,h)anthracene	7.91E-03	1.65E-02	7.91E-03	1.65E-02	7.23E-04	1.51E-03	3.23E-03	6.74E-03
Dieldrin	1.32E-02	3.09E-02	1.32E-02	3.09E-02	3.14E-05	7.33E-05	5.36E-03	1.25E-02
Endrin Aldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-04	3.17E-04	3.85E-06	1.12E-05
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.49E-05	1.67E-04	2.64E-06	5.88E-06
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
gamma-Chlordane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.87E-06	2.43E-05	3.48E-07	8.56E-07
Indeno(1,2,3-cd)pyrene	2.94E-02	6.09E-02	2.94E-02	6.09E-02	1.44E-03	2.97E-03	1.20E-02	2.47E-02
Lead	1.61E+00	3.12E+00	1.61E+00	3.12E+00	2.41E+00	4.68E+00	7.35E-01	1.43E+00
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	2.35E-01	2.47E-01	2.35E-01	2.47E-01	3.76E-01	3.96E-01	1.08E-01	1.14E-01
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	2.43E+02	4.57E+02	2.43E+02	4.57E+02	5.21E-10	9.78E-10	9.83E+01	1.85E+02
LPAH	7.07E-02	3.51E-01	7.07E-02	3.51E-01	2.04E-02	1.01E-01	2.93E-02	1.46E-01
HPAH	2.33E-01	6.41E-01	2.33E-01	6.41E-01	6.71E-02	1.85E-01	9.65E-02	2.66E-01
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical							TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene							4.18E-04	1.12E-03
4,4-DDD							3.92E-03	2.55E-02
4,4'-DDE							8.95E-04	2.86E-03
4,4'-DDT							1.94E-03	6.58E-03
Acenaphthene							8.48E-04	2.81E-03
Acenaphthylene							5.44E-04	1.61E-03
Anthracene							1.37E-03	4.23E-03
Aroclor-1254							9.58E-02	3.49E-01
Benzo(a)anthracene							8.36E-03	2.83E-02
Benzo(a)pyrene							1.65E-02	4.97E-02
Benzo(b)fluoranthene							2.17E-02	5.94E-02
Benzo(g,h,i)perylene							4.62E-03	1.56E-02
Benzo(k)fluoranthene							8.56E-03	2.17E-02
Boron							6.64E-02	1.38E-01
Chrysene							1.13E-02	3.46E-02
Cobalt							5.28E-02	6.81E-02
Copper							1.13E+00	1.88E+00
Dibenz(a,h)anthracene							5.44E-03	1.19E-02
Dieldrin							5.38E-03	1.25E-02
Endrin Aldehyde							3.66E-05	1.31E-04
Endrin Ketone							2.54E-05	6.29E-05
Ethylbenzene							0.00E+00	0.00E+00
Fluoranthene							1.14E-02	3.78E-02
Fluorene							7.34E-04	2.21E-03
gamma-Chlordane							1.21E-05	3.65E-05
Indeno(1,2,3-cd)pyrene							1.87E-02	4.06E-02

TABLE C-8
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN

Lead	1.73E+00	2.63E+00
Molybdenum	1.86E-02	2.34E-02
Naphthalene	0.00E+00	0.00E+00
Nickel	2.74E-01	2.93E-01
Phenanthrene	7.30E-03	3.13E-02
Pyrene	7.60E-03	1.95E-02
Strontium	1.01E+00	1.44E+00
Titanium	4.25E-01	8.98E-01
Vanadium	1.96E-01	2.11E-01
Zinc	1.07E+02	1.95E+02
LPAH	4.05E-02	1.89E-01
HPAH	1.58E-01	4.49E-01
TOTAL PAHs	1.99E-01	6.38E-01

TABLE C-9
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RED-TAILED HAWK

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * Dfb * AUF) / (BW))						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01			EPA, 1999 (normalized for bw)	
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01			EPA, 1993	
Dfb	Dietary fraction of birds (unitless)	2.15E-01			EPA, 1993	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	9.60E-01			EPA, 1999	

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4-DDD	2.09E-04	1.36E-03	1.26E-04	8.17E-04	3.53E-05	2.30E-04
4,4'-DDE	4.64E-05	1.47E-04	2.79E-05	8.86E-05	7.84E-06	2.49E-05
4,4'-DDT	1.01E-04	3.41E-04	6.07E-05	2.05E-04	1.71E-05	5.77E-05
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	4.99E-03	1.80E-02	3.00E-03	1.08E-02	8.45E-04	3.05E-03
Benzo(a)anthracene	1.93E-03	6.19E-03	1.16E-03	3.72E-03	3.27E-04	1.05E-03
Benzo(a)pyrene	7.06E-03	2.05E-02	4.26E-03	1.24E-02	1.19E-03	3.47E-03
Benzo(b)fluoranthene	1.12E-02	3.02E-02	6.73E-03	1.81E-02	1.90E-03	5.11E-03
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	3.76E-03	9.06E-03	2.25E-03	5.42E-03	6.36E-04	1.53E-03
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	2.71E-03	7.78E-03	1.63E-03	4.69E-03	4.59E-04	1.32E-03
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dibenz(a,h)anthracene	6.01E-03	1.26E-02	3.63E-03	7.58E-03	1.02E-03	2.13E-03
Dieldrin	5.09E-06	1.19E-05	3.31E-06	7.73E-06	8.71E-07	2.03E-06
Endrin Aldehyde	4.50E-06	1.30E-05	2.95E-06	8.53E-06	7.71E-07	2.23E-06
Endrin Ketone	3.08E-06	6.87E-06	2.02E-06	4.50E-06	5.28E-07	1.18E-06
Ethylbenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
gamma-Chlordane	1.82E-05	4.47E-05	1.19E-05	2.92E-05	3.11E-06	7.66E-06
Indeno(1,2,3-cd)pyrene	4.57E-02	9.46E-02	2.75E-02	5.69E-02	7.74E-03	1.60E-02
Lead	9.66E-03	1.88E-02	0.00E+00	0.00E+00	1.40E-03	2.73E-03
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	4.24E-02	4.46E-02	0.00E+00	0.00E+00	6.15E-03	6.48E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	2.34E-02	4.40E-02	1.74E+00	3.27E+00	7.27E-02	1.37E-01
LPAH	5.37E-02	2.67E-01	3.24E-02	1.61E-01	9.09E-03	4.51E-02
HPAH	1.77E-01	4.87E-01	1.07E-01	2.94E-01	2.99E-02	8.25E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE C-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
2-Methylnaphthalene	1.00E-04	4.91E-04			
4,4-DDD	3.27E-03	2.13E-02	1.47E-01	2.22E-02	1.45E-01
4,4'-DDE	7.26E-04	2.30E-03	1.47E-01	4.94E-03	1.57E-02
4,4'-DDT	1.58E-03	5.33E-03	1.47E-01	1.07E-02	3.63E-02
Acenaphthene	6.03E-05	1.66E-04			
Acenaphthylene	6.04E-05	1.64E-04			
Anthracene	1.26E-04	3.02E-04			
Aroclor-1254	7.86E-02	2.84E-01	1.55E-01	5.07E-01	1.83E+00
Benzo(a)anthracene	4.51E-03	1.45E-02			
Benzo(a)pyrene	9.58E-03	2.78E-02			
Benzo(b)fluoranthene	1.29E-02	3.47E-02			
Benzo(g,h,i)perylene	3.61E-04	7.84E-04			
Benzo(k)fluoranthene	4.86E-03	1.17E-02			
Boron	6.92E-03	1.06E-02			
Chrysene	6.47E-03	1.86E-02			
Cobalt	5.96E-03	6.34E-03			
Copper	2.92E+00	5.65E+00	5.60E+00	5.21E-01	1.01E+00
Dibenz(a,h)anthracene	3.01E-03	6.28E-03			
Dieldrin	4.45E-03	1.04E-02	1.50E-02	2.97E-01	6.92E-01
Endrin Aldehyde	3.16E-05	9.15E-05	9.20E-02	3.43E-04	9.94E-04
Endrin Ketone	2.16E-05	4.82E-05	9.20E-02	2.35E-04	5.24E-04
Ethylbenzene	5.47E-06	1.83E-05			
Fluoranthene	8.55E-04	2.71E-03			
Fluorene	6.36E-05	1.54E-04			
gamma-Chlordane	3.60E-06	8.86E-06	4.60E+00	7.82E-07	1.93E-06
Indeno(1,2,3-cd)pyrene	1.08E-02	2.23E-02			
Lead	1.25E+00	2.43E+00	4.70E+00	2.66E-01	5.17E-01
Molybdenum	1.28E-03	2.32E-03			
Naphthalene	4.65E-04	3.99E-03			
Nickel	1.95E-01	2.05E-01	1.70E+00	1.15E-01	1.21E-01
Phenanthrene	5.77E-04	1.94E-03			
Pyrene	6.22E-04	1.86E-03			
Strontium	1.09E-01	1.45E-01			
Titanium	3.71E-02	4.64E-02			
Vanadium	2.07E-02	2.18E-02	4.16E+00	4.98E-03	5.25E-03
Zinc	8.22E+01	1.54E+02	7.54E+01	1.09E+00	2.05E+00
LPAH	3.05E-02	1.52E-01	6.56E+01	4.66E-04	2.31E-03
HPAH	1.01E-01	2.77E-01	6.15E-01	1.63E-01	4.51E-01
TOTAL PAHs	1.31E-01	4.29E-01			

TABLE C-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
COYOTE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
2-Methylnaphthalene	0.00E+00	0.00E+00			
4,4-DDD	1.88E-05	1.22E-04	1.47E-01	1.28E-04	8.32E-04
4,4'-DDE	4.17E-06	1.33E-05	1.47E-01	2.84E-05	9.02E-05
4,4'-DDT	9.08E-06	3.07E-05	1.47E-01	6.18E-05	2.09E-04
Acenaphthene	0.00E+00	0.00E+00			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	0.00E+00	0.00E+00			
Aroclor-1254	4.50E-04	1.62E-03	1.55E-01	2.90E-03	1.05E-02
Benzo(a)anthracene	1.74E-04	5.57E-04			
Benzo(a)pyrene	6.36E-04	1.85E-03			
Benzo(b)fluoranthene	1.01E-03	2.72E-03			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	3.38E-04	8.15E-04			
Boron	0.00E+00	0.00E+00			
Chrysene	2.44E-04	7.00E-04			
Cobalt	0.00E+00	0.00E+00			
Copper	0.00E+00	0.00E+00	5.60E+00	0.00E+00	0.00E+00
Dibenz(a,h)anthracene	5.42E-04	1.13E-03			
Dieldrin	4.65E-07	1.08E-06	1.50E-02	3.10E-05	7.22E-05
Endrin Aldehyde	4.11E-07	1.19E-06	9.20E-02	4.47E-06	1.29E-05
Endrin Ketone	2.81E-07	6.28E-07	9.20E-02	3.06E-06	6.82E-06
Ethylbenzene	0.00E+00	0.00E+00			
Fluoranthene	0.00E+00	0.00E+00			
Fluorene	0.00E+00	0.00E+00			
gamma-Chlordane	1.66E-06	4.08E-06	4.60E+00	3.61E-07	8.88E-07
Indeno(1,2,3-cd)pyrene	4.12E-03	8.52E-03			
Lead	7.24E-04	1.41E-03	4.70E+00	1.54E-04	2.99E-04
Molybdenum	0.00E+00	0.00E+00			
Naphthalene	0.00E+00	0.00E+00			
Nickel	3.18E-03	3.35E-03	1.70E+00	1.87E-03	1.97E-03
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Strontium	0.00E+00	0.00E+00			
Titanium	0.00E+00	0.00E+00			
Vanadium	0.00E+00	0.00E+00	4.16E+00	0.00E+00	0.00E+00
Zinc	4.53E-02	8.51E-02	7.54E+01	6.01E-04	1.13E-03
LPAH	4.84E-03	2.40E-02	6.56E+01	7.38E-05	3.66E-04
HPAH	1.59E-02	4.39E-02	6.15E-01	2.59E-02	7.14E-02
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE C-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
2-Methylnaphthalene	7.26E-05	3.55E-04			
4,4-DDD	4.96E-05	3.23E-04	2.27E-01	2.19E-04	1.42E-03
4,4'-DDE	1.10E-05	3.50E-05	2.27E-01	4.85E-05	1.54E-04
4,4'-DDT	2.40E-05	8.10E-05	2.27E-01	1.06E-04	3.57E-04
Acenaphthene	4.36E-05	1.20E-04			
Acenaphthylene	4.37E-05	1.19E-04			
Anthracene	9.09E-05	2.18E-04			
Aroclor-1254	1.21E-03	4.38E-03	1.80E-01	6.74E-03	2.43E-02
Benzo(a)anthracene	3.39E-04	1.09E-03			
Benzo(a)pyrene	5.61E-04	1.63E-03			
Benzo(b)fluoranthene	7.78E-04	2.10E-03			
Benzo(g,h,i)perylene	2.61E-04	5.67E-04			
Benzo(k)fluoranthene	2.68E-04	6.46E-04			
Boron	5.00E-03	7.68E-03			
Chrysene	4.32E-04	1.24E-03			
Cobalt	4.31E-03	4.58E-03			
Copper	2.91E-02	5.63E-02	4.05E+00	7.19E-03	1.39E-02
Dibenz(a,h)anthracene	2.37E-04	4.95E-04			
Dieldrin	5.40E-05	1.26E-04	7.09E-02	7.61E-04	1.77E-03
Endrin Aldehyde	2.04E-06	5.91E-06	1.00E-02	2.04E-04	5.91E-04
Endrin Ketone	1.40E-06	3.12E-06	1.00E-02	1.40E-04	3.12E-04
Ethylbenzene	3.95E-06	1.32E-05			
Fluoranthene	6.18E-04	1.96E-03			
Fluorene	4.60E-05	1.11E-04			
gamma-Chlordane	9.86E-07	2.43E-06	2.14E+00	4.61E-07	1.13E-06
Indeno(1,2,3-cd)pyrene	1.17E-03	2.41E-03			
Lead	6.22E-02	1.21E-01	1.63E+00	3.82E-02	7.42E-02
Molybdenum	9.26E-04	1.67E-03			
Naphthalene	3.36E-04	2.89E-03			
Nickel	1.37E-02	1.44E-02	6.71E+00	2.04E-03	2.15E-03
Phenanthrene	4.17E-04	1.40E-03			
Pyrene	4.49E-04	1.34E-03			
Strontium	7.86E-02	1.05E-01			
Titanium	2.68E-02	3.35E-02			
Vanadium	1.50E-02	1.58E-02	3.44E-01	4.35E-02	4.59E-02
Zinc	1.43E+00	2.69E+00	6.61E+01	2.16E-02	4.06E-02
LPAH	2.12E-03	1.05E-02	6.56E+01	3.22E-05	1.60E-04
HPAH	6.96E-03	1.92E-02	6.15E-01	1.13E-02	3.12E-02
TOTAL PAHs	9.08E-03	2.97E-02			

TABLE C-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
2-Methylnaphthalene	4.18E-04	1.12E-03			
4,4-DDD	3.92E-03	2.55E-02	2.27E-01	1.73E-02	1.12E-01
4,4'-DDE	8.95E-04	2.86E-03	2.27E-01	3.94E-03	1.26E-02
4,4'-DDT	1.94E-03	6.58E-03	2.27E-01	8.56E-03	2.90E-02
Acenaphthene	8.48E-04	2.81E-03			
Acenaphthylene	5.44E-04	1.61E-03			
Anthracene	1.37E-03	4.23E-03			
Aroclor-1254	9.58E-02	3.49E-01	1.80E-01	5.32E-01	1.94E+00
Benzo(a)anthracene	8.36E-03	2.83E-02			
Benzo(a)pyrene	1.65E-02	4.97E-02			
Benzo(b)fluoranthene	2.17E-02	5.94E-02			
Benzo(g,h,i)perylene	4.62E-03	1.56E-02			
Benzo(k)fluoranthene	8.56E-03	2.17E-02			
Boron	6.64E-02	1.38E-01			
Chrysene	1.13E-02	3.46E-02			
Cobalt	5.28E-02	6.81E-02			
Copper	1.13E+00	1.88E+00	4.05E+00	2.80E-01	4.65E-01
Dibenz(a,h)anthracene	5.44E-03	1.19E-02			
Dieldrin	5.38E-03	1.25E-02	7.09E-02	7.58E-02	1.77E-01
Endrin Aldehyde	3.66E-05	1.31E-04	1.00E-02	3.66E-03	1.31E-02
Endrin Ketone	2.54E-05	6.29E-05	1.00E-02	2.54E-03	6.29E-03
Fluoranthene	1.14E-02	3.78E-02			
Fluorene	7.34E-04	2.21E-03			
gamma-Chlordane	1.21E-05	3.65E-05	2.14E+00	5.67E-06	1.70E-05
Indeno(1,2,3-cd)pyrene	1.87E-02	4.06E-02			
Lead	1.73E+00	2.63E+00	1.63E+00	1.06E+00	1.61E+00
Molybdenum	1.86E-02	2.34E-02			
Naphthalene	0.00E+00	0.00E+00			
Nickel	2.74E-01	2.93E-01	6.71E+00	4.09E-02	4.36E-02
Phenanthrene	7.30E-03	3.13E-02			
Pyrene	7.60E-03	1.95E-02			
Strontium	1.01E+00	1.44E+00			
Titanium	4.25E-01	8.98E-01			
Vanadium	1.96E-01	2.11E-01	3.44E-01	5.70E-01	6.15E-01
Zinc	1.07E+02	1.95E+02	6.61E+01	1.62E+00	2.95E+00
LPAH	4.05E-02	1.89E-01	6.56E+01	6.18E-04	2.88E-03
HPAH	1.58E-01	4.49E-01	6.15E-01	2.57E-01	7.31E-01
TOTAL PAHs	1.99E-01	6.38E-01			

TABLE C-14
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
2-Methylnaphthalene	0.00E+00	0.00E+00			
4,4-DDD	3.53E-05	2.30E-04	2.27E-01	1.56E-04	1.01E-03
4,4'-DDE	7.84E-06	2.49E-05	2.27E-01	3.45E-05	1.10E-04
4,4'-DDT	1.71E-05	5.77E-05	2.27E-01	7.52E-05	2.54E-04
Acenaphthene	0.00E+00	0.00E+00			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	0.00E+00	0.00E+00			
Aroclor-1254	8.45E-04	3.05E-03	1.80E-01	4.69E-03	1.69E-02
Benzo(a)anthracene	3.27E-04	1.05E-03			
Benzo(a)pyrene	1.19E-03	3.47E-03			
Benzo(b)fluoranthene	1.90E-03	5.11E-03			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	6.36E-04	1.53E-03			
Boron	0.00E+00	0.00E+00			
Chrysene	4.59E-04	1.32E-03			
Cobalt	0.00E+00	0.00E+00			
Copper	0.00E+00	0.00E+00	4.05E+00	0.00E+00	0.00E+00
Dibenz(a,h)anthracene	1.02E-03	2.13E-03			
Dieldrin	8.71E-07	2.03E-06	7.09E-02	1.23E-05	2.86E-05
Endrin Aldehyde	7.71E-07	2.23E-06	1.00E-02	7.71E-05	2.23E-04
Endrin Ketone	5.28E-07	1.18E-06	1.00E-02	5.28E-05	1.18E-04
Fluoranthene	0.00E+00	0.00E+00			
Fluorene	0.00E+00	0.00E+00			
gamma-Chlordane	3.11E-06	7.66E-06	2.14E+00	1.45E-06	3.58E-06
Indeno(1,2,3-cd)pyrene	7.74E-03	1.60E-02			
Lead	1.40E-03	2.73E-03	1.63E+00	8.60E-04	1.67E-03
Molybdenum	0.00E+00	0.00E+00			
Naphthalene	0.00E+00	0.00E+00			
Nickel	6.15E-03	6.48E-03	6.71E+00	9.17E-04	9.66E-04
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Strontium	0.00E+00	0.00E+00			
Titanium	0.00E+00	0.00E+00			
Vanadium	0.00E+00	0.00E+00	3.44E-01	0.00E+00	0.00E+00
Zinc	7.27E-02	1.37E-01	6.61E+01	1.10E-03	2.07E-03
LPAH	9.09E-03	4.51E-02	6.56E+01	1.39E-04	6.88E-04
HPAH	2.99E-02	8.25E-02	6.15E-01	4.87E-02	1.34E-01
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE C-15
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Food = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
2-Methylnaphthalene	6.98E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
4,4-DDD	7.66E-03	1.26E+00	9.65E-03 EPA, 1999		1.26E+00	9.65E-03 EPA, 1999		9.37E-03	7.18E-05 EPA, 1999		2.72E-02	2.08E-04 EPA, 1999		6.52E-05	4.99E-07 EPA, 1999		2.09E-04	1.59E-02	1.22E-04 EPA, 1999		5.10E-04	3.91E-06 EPA, 1999		1.26E-04
4,4'-DDE	1.70E-03	1.26E+00	2.14E-03 EPA, 1999		1.26E+00	2.14E-03 EPA, 1999		9.37E-03	1.59E-05 EPA, 1999		2.72E-02	4.62E-05 EPA, 1999		6.52E-05	1.11E-07 EPA, 1999		4.64E-05	1.59E-02	2.70E-05 EPA, 1999		5.10E-04	8.67E-07 EPA, 1999		2.79E-05
4,4'-DDT	3.70E-03	1.26E+00	4.66E-03 EPA, 1999		1.26E+00	4.66E-03 EPA, 1999		9.37E-03	3.47E-05 EPA, 1999		2.72E-02	1.01E-04 EPA, 1999		6.52E-05	2.41E-07 EPA, 1999		1.01E-04	1.59E-02	5.88E-05 EPA, 1999		5.10E-04	1.89E-06 EPA, 1999		6.07E-05
Acenaphthene	4.19E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Acenaphthylene	4.20E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Anthracene	8.74E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Aroclor-1254	2.05E-01	1.13E+00	2.32E-01 EPA, 1999		1.13E+00	2.32E-01 EPA, 1999		1.00E-02	2.05E-03 EPA, 1999		2.43E-02	4.98E-03 EPA, 1999		5.83E-05	1.20E-05 EPA, 1999		4.99E-03	1.42E-02	2.91E-03 EPA, 1999		4.55E-04	9.33E-05 EPA, 1999		3.00E-03
Benzo(a)anthracene	2.68E-01	3.00E-02	8.04E-03 EPA, 1999		3.00E-02	8.04E-03 EPA, 1999		2.02E-02	5.41E-03 EPA, 1999		7.19E-03	1.93E-03 EPA, 1999		1.73E-05	4.64E-06 EPA, 1999		1.93E-03	4.20E-03	1.13E-03 EPA, 1999		1.35E-04	3.62E-05 EPA, 1999		1.16E-03
Benzo(a)pyrene	3.47E-01	7.00E-02	2.43E-02 EPA, 1999		7.00E-02	2.43E-02 EPA, 1999		1.01E-02	3.50E-03 EPA, 1999		2.03E-02	7.04E-03 EPA, 1999		4.86E-05	1.69E-05 EPA, 1999		7.06E-03	1.19E-02	4.13E-03 EPA, 1999		3.81E-04	1.32E-04 EPA, 1999		4.26E-03
Benzo(b)fluoranthene	4.66E-01	7.00E-02	3.26E-02 EPA, 1999		7.00E-02	3.26E-02 EPA, 1999		1.01E-02	4.71E-03 EPA, 1999		2.40E-02	1.12E-02 EPA, 1999		5.75E-05	2.68E-05 EPA, 1999		1.12E-02	1.40E-02	6.52E-03 EPA, 1999		4.50E-04	2.10E-04 EPA, 1999		6.73E-03
Benzo(g,h,i)perylene	2.51E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Benzo(k)fluoranthene	1.57E-01	8.00E-02	1.26E-02 EPA, 1999		8.00E-02	1.26E-02 EPA, 1999		1.01E-02	1.59E-03 EPA, 1999		2.39E-02	3.75E-03 EPA, 1999		5.73E-05	9.00E-06 EPA, 1999		3.76E-03	1.39E-02	2.18E-03 EPA, 1999		4.48E-04	7.03E-05 EPA, 1999		2.25E-03
Boron	4.81E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Chrysene	3.27E-01	4.00E-02	1.31E-02 EPA, 1999		4.00E-02	1.31E-02 EPA, 1999		1.87E-02	6.11E-03 EPA, 1999		8.27E-03	2.70E-03 EPA, 1999		1.99E-05	6.51E-06 EPA, 1999		2.71E-03	4.84E-03	1.58E-03 EPA, 1999		1.55E-04	5.07E-05 EPA, 1999		1.63E-03
Cobalt	4.14E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Copper	2.43E+01	4.00E-02	9.70E-01 EPA, 1999		4.00E-02	9.70E-01 EPA, 1999		4.00E-01	9.70E+00 EPA, 1999			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Dibenz(a,h)anthracene	1.13E-01	7.00E-02	7.91E-03 EPA, 1999		7.00E-02	7.91E-03 EPA, 1999		6.40E-03	7.23E-04 EPA, 1999		5.31E-02	6.00E-03 EPA, 1999		1.27E-04	1.44E-05 EPA, 1999		6.01E-03	3.11E-02	3.51E-03 EPA, 1999		9.98E-04	1.13E-04 EPA, 1999		3.63E-03
Dieldrin	9.01E-04	1.47E+01	1.32E-02 EPA, 2005f		1.47E+01	1.32E-02 EPA, 2005f		3.49E-02	3.14E-05 EPA, 1998		5.65E-03	5.09E-06 EPA, 1998			0.00E+00		5.09E-06	3.68E-03	3.31E-06 EPA, 1998			0.00E+00		3.31E-06
Endrin Aldehyde	1.90E-03		0.00E+00			0.00E+00		5.76E-02	1.09E-04 EPA, 1998		2.37E-03	4.50E-06 EPA, 1998			0.00E+00		4.50E-06	1.55E-03	2.95E-06 EPA, 1998			0.00E+00		2.95E-06
Edrin Ketone	1.30E-03		0.00E+00			0.00E+00		5.76E-02	7.49E-05 EPA, 1998		2.37E-03	3.08E-06 EPA, 1998			0.00E+00		3.08E-06	1.55E-03	2.02E-06 EPA, 1998			0.00E+00		2.02E-06
Ethylbenzene	3.80E-03		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluoranthene	5.94E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluorene	4.42E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
gamma-Chlordane	6.90E-04		0.00E+00			0.00E+00		1.43E-02	9.87E-06 EPA, 1998		2.63E-02	1.82E-05 EPA, 1998			0.00E+00		1.82E-05	1.72E-02	1.19E-05 EPA, 1998			0.00E+00		1.19E-05
Indeno(1,2,3-cd)pyrene	3.68E-01	8.00E-02	2.94E-02 EPA, 1999		8.00E-02	2.94E-02 EPA, 1999		3.90E-03	1.44E-03 EPA, 1999		1.24E-01	4.56E-02 EPA, 1999		2.98E-04	1.10E-04 EPA, 1999		4.57E-02	7.24E-02	2.66E-02 EPA, 1999		2.32E-03	8.54E-04 EPA, 1999		2.75E-02
Lead	5.35E+01	3.00E-02	1.61E+00 EPA, 1999		3.00E-02	1.61E+00 EPA, 1999		4.50E-02	2.41E+00 EPA, 1999		1.80E-04	9.63E-03 EPA, 1999			4.32E-07		2.31E-05 EPA, 1999		9.66E-03			0.00E+00		0.00E+00
Molybdenum	8.90E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Naphthalene	3.23E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Nickel	1.17E+01	2.00E-02	2.35E-01 EPA, 1999		2.00E-02	2.35E-01 EPA, 1999		3.20E-02	3.76E-01 EPA, 1999		3.60E-03	4.23E-02 EPA, 1999		8.63E-06	1.01E-04 EPA, 1999		4.24E-02		0.00E+00			0.00E+00		0.00E+00
Phenanthrene	4.01E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Pyrene	4.32E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Strontium	7.56E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Titanium	2.58E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Vanadium	1.44E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Zinc	4.34E+02	5.60E-01	2.43E+02 EPA, 1999		5.60E-01	2.43E+02 EPA, 1999		1.20E-12	5.21E-10 EPA, 1999		5.39E-05	2.34E-02 EPA, 1999		1.29E-07	5.60E-05 EPA, 1999		2.34E-02	3.89E-03	1.69E+00 EPA, 1999		1.25E-04	5.42E-02 EPA, 1999		1.74E+00
LPAH	1.01E+00	7.00E-02	7.07E-02 EPA, 1999*		7.00E-02	7.07E-02 EPA, 1999*		2.02E-02	2.04E-02 EPA, 1999*		5.31E-02	5.36E-02 EPA, 1999*		1.27E-04	1.28E-04 EPA, 1999*		5.37E-02	3.11E-02	3.14E-02 EPA, 1999*		9.98E-04	1.01E-03 EPA, 1999*		3.24E-02
HPAH	3.32E+00	7.00E-02	2.33E-01 EPA, 1999*		7.00E-02	2.33E-01 EPA, 1999*		2.02E-02	6.71E-02 EPA, 1999*		5.31E-02	1.76E-01 EPA, 1999*		1.27E-04	4.22E-04 EPA, 1999*		1.77E-01	3.11E-02	1.03E-01 EPA, 1999*		9.98E-04	3.32E-03 EPA, 1999*		1.07E-01
TOTAL PAHs	4.33E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE C-16
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Food = Csoil x BCF (or BAF)																									
where:																									
Cfood =	Chemical Concentration in food (mg/kg dry)																								
Csoil =	Chemical Concentration in soil (mg/kg dry)																								
BCF	Bioconcentration Factor (unitless)																								
BAF	Bioaccumulation Factor (unitless)																								
Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION	
2-Methylnaphthalene	3.41E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
4,4-DDD	4.98E-02	1.26E+00	6.27E-02 EPA, 1999		1.26E+00	6.27E-02 EPA, 1999		9.37E-03	4.67E-04 EPA, 1999		2.72E-02	1.35E-03 EPA, 1999		6.52E-05	3.25E-06 EPA, 1999		1.36E-03	1.59E-02		7.92E-04 EPA, 1999		5.10E-04	2.54E-05 EPA, 1999		8.17E-04
4,4'-DDE	5.40E-03	1.26E+00	6.80E-03 EPA, 1999		1.26E+00	6.80E-03 EPA, 1999		9.37E-03	5.06E-05 EPA, 1999		2.72E-02	1.47E-04 EPA, 1999		6.52E-05	3.52E-07 EPA, 1999		1.47E-04	1.59E-02		8.59E-05 EPA, 1999		5.10E-04	2.75E-06 EPA, 1999		8.86E-05
4,4'-DDT	1.25E-02	1.26E+00	1.58E-02 EPA, 1999		1.26E+00	1.58E-02 EPA, 1999		9.37E-03	1.17E-04 EPA, 1999		2.72E-02	3.40E-04 EPA, 1999		6.52E-05	8.15E-07 EPA, 1999		3.41E-04	1.59E-02		1.99E-04 EPA, 1999		5.10E-04	6.38E-06 EPA, 1999		2.05E-04
Acenaphthene	1.15E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Acenaphthylene	1.14E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Anthracene	2.10E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Aroclor-1254	7.40E-01	1.13E+00	8.36E-01 EPA, 1999		1.13E+00	8.36E-01 EPA, 1999		1.00E-02	7.40E-03 EPA, 1999		2.43E-02	1.80E-02 EPA, 1999		5.83E-05	4.31E-05 EPA, 1999		1.80E-02	1.42E-02		1.05E-02 EPA, 1999		4.55E-04	3.37E-04 EPA, 1999		1.08E-02
Benzo(a)anthracene	8.59E-01	3.00E-02	2.58E-02 EPA, 1999		3.00E-02	2.58E-02 EPA, 1999		2.02E-02	1.74E-02 EPA, 1999		7.19E-03	6.18E-03 EPA, 1999		1.73E-05	1.49E-05 EPA, 1999		6.19E-03	4.20E-03		3.61E-03 EPA, 1999		1.35E-04	1.16E-04 EPA, 1999		3.72E-03
Benzo(a)pyrene	1.01E+00	7.00E-02	7.06E-02 EPA, 1999		7.00E-02	7.06E-02 EPA, 1999		1.01E-02	1.02E-02 EPA, 1999		2.03E-02	2.05E-02 EPA, 1999		4.86E-05	4.90E-05 EPA, 1999		2.05E-02	1.19E-02		1.20E-02 EPA, 1999		3.81E-04	3.84E-04 EPA, 1999		1.24E-02
Benzo(b)fluoranthene	1.26E+00	7.00E-02	8.79E-02 EPA, 1999		7.00E-02	8.79E-02 EPA, 1999		1.01E-02	1.27E-02 EPA, 1999		2.40E-02	3.01E-02 EPA, 1999		5.75E-05	7.22E-05 EPA, 1999		3.02E-02	1.40E-02		1.76E-02 EPA, 1999		4.50E-04	5.65E-04 EPA, 1999		1.81E-02
Benzo(g,h,i)perylene	5.45E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Benzo(k)fluoranthene	3.78E-01	8.00E-02	3.02E-02 EPA, 1999		8.00E-02	3.02E-02 EPA, 1999		1.01E-02	3.82E-03 EPA, 1999		2.39E-02	9.03E-03 EPA, 1999		5.73E-05	2.17E-05 EPA, 1999		9.06E-03	1.39E-02		5.25E-03 EPA, 1999		4.48E-04	1.69E-04 EPA, 1999		5.42E-03
Boron	7.39E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Chrysene	9.38E-01	4.00E-02	3.75E-02 EPA, 1999		4.00E-02	3.75E-02 EPA, 1999		1.87E-02	1.75E-02 EPA, 1999		8.27E-03	7.76E-03 EPA, 1999		1.99E-05	1.87E-05 EPA, 1999		7.78E-03	4.84E-03		4.54E-03 EPA, 1999		1.55E-04	1.45E-04 EPA, 1999		4.69E-03
Cobalt	4.41E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Copper	4.69E+01	4.00E-02	1.88E+00 EPA, 1999		4.00E-02	1.88E+00 EPA, 1999		4.00E-01	1.88E+01 EPA, 1999			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	2.36E-01	7.00E-02	1.65E-02 EPA, 1999		7.00E-02	1.65E-02 EPA, 1999		6.40E-03	1.51E-03 EPA, 1999		5.31E-02	1.25E-02 EPA, 1999		1.27E-04	3.00E-05 EPA, 1999		1.26E-02	3.11E-02		7.34E-03 EPA, 1999		9.98E-04	2.36E-04 EPA, 1999		7.58E-03
Dieldrin	2.10E-03	1.47E+01	3.09E-02 EPA, 2005f		1.47E+01	3.09E-02 EPA, 2005f		3.49E-02	7.33E-05 EPA, 1998		5.65E-03	1.19E-05 EPA, 1998			0.00E+00		1.19E-05	3.68E-03		7.73E-06 EPA, 1998			0.00E+00		7.73E-06
Endrin Aldehyde	5.50E-03		0.00E+00			0.00E+00		5.76E-02	3.17E-04 EPA, 1998		2.37E-03	1.30E-05 EPA, 1998			0.00E+00		1.30E-05	1.55E-03		8.53E-06 EPA, 1998			0.00E+00		8.53E-06
Edrin Ketone	2.90E-03		0.00E+00			0.00E+00		5.76E-02	1.67E-04 EPA, 1998		2.37E-03	6.87E-06 EPA, 1998			0.00E+00		6.87E-06	1.55E-03		4.50E-06 EPA, 1998			0.00E+00		4.50E-06
Fluoranthene	1.89E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Fluorene	1.07E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
gamma-Chlordane	1.70E-03		0.00E+00			0.00E+00		1.43E-02	2.43E-05 EPA, 1998		2.63E-02	4.47E-05 EPA, 1998			0.00E+00		4.47E-05	1.72E-02		2.92E-05 EPA, 1998			0.00E+00		2.92E-05
Indeno(1,2,3-cd)pyrene	7.61E-01	8.00E-02	6.09E-02 EPA, 1999		8.00E-02	6.09E-02 EPA, 1999		3.90E-03	2.97E-03 EPA, 1999		1.24E-01	9.44E-02 EPA, 1999		2.98E-04	2.27E-04 EPA, 1999		9.46E-02	7.24E-02		5.51E-02 EPA, 1999		2.32E-03	1.77E-03 EPA, 1999		5.69E-02
Lead	1.04E+02	3.00E-02	3.12E+00 EPA, 1999		3.00E-02	3.12E+00 EPA, 1999		4.50E-02	4.68E+00 EPA, 1999		1.80E-04	1.87E-02 EPA, 1999			4.49E-05 EPA, 1999		1.88E-02	0.00E+00		0.00E+00			0.00E+00		0.00E+00
Molybdenum	1.61E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Naphthalene	2.78E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Nickel	1.24E+01	2.00E-02	2.47E-01 EPA, 1999		2.00E-02	2.47E-01 EPA, 1999		3.20E-02	3.96E-01 EPA, 1999		3.60E-03	4.45E-02 EPA, 1999		8.63E-06	1.07E-04 EPA, 1999		4.46E-02	0.00E+00		0.00E+00			0.00E+00		0.00E+00
Phenanthrene	1.35E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Pyrene	1.29E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Strontium	1.01E+02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Titanium	3.22E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Vanadium	1.52E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	
Zinc	8.15E+02	5.60E-01	4.57E+02 EPA, 1999		5.60E-01	4.57E+02 EPA, 1999		1.20E-12	9.78E-10 EPA, 1999		5.39E-05	4.39E-02 EPA, 1999		1.29E-07	1.05E-04 EPA, 1999		4.40E-02	3.89E-03		3.17E+00 EPA, 1999		1.25E-04	1.02E-01 EPA, 1999		3.27E+00
LPAH	5.01E+00	7.00E-02	3.51E-01 EPA, 1999*		7.00E-02	3.51E-01 EPA, 1999*		2.02E-02	1.01E-01 EPA, 1999*		5.31E-02	2.66E-01 EPA, 1999*		1.27E-04	6.36E-04 EPA, 1999*		2.67E-01	3.11E-02		1.56E-01 EPA, 1999*		9.98E-04	5.00E-03 EPA, 1999*		1.61E-01
HPAH	9.16E+00	7.00E-02	6.41E-01 EPA, 1999*		7.00E-02	6.41E-01 EPA, 1999*		2.02E-02	1.85E-01 EPA, 1999*		5.31E-02	4.86E-01 EPA, 1999*		1.27E-04	1.16E-03 EPA, 1999*		4.87E-01	3.11E-02		2.85E-01 EPA, 1999*		9.98E-04	9.14E-03 EPA, 1999*		2.94E-01
TOTAL PAHs	1.42E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00	

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE D-1
EXPOSURE POINT CONCENTRATION (mg/kg)
SOIL NORTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0103		0.0198	95% Chebyshev
4,4'-DDE	7.00E-04		0.0024	95% Chebyshev
4,4'-DDT	7.04E-04		0.0038	99% Chebyshev
Acenaphthene	0.0142		0.036	95% Chebyshev
Acenaphthylene				NC
Anthracene	0.0215		0.107	99% Chebyshev
Aroclor-1254	0.0056		0.0168	95% Chebyshev
Benzo(a)anthracene	0.068		0.464	99% Chebyshev
Benzo(a)pyrene	0.0922		0.554	99% Chebyshev
Benzo(b)fluoranthene	0.12		0.649	99% Chebyshev
Benzo(g,h,i)perylene	0.0961		0.494	99% Chebyshev
Benzo(k)fluoranthene	0.0601		0.341	99% Chebyshev
Boron	7.576		20.55	99% Chebyshev
Cadmium	0.193		0.59	99% Chebyshev
Chrysene	0.0885		0.529	99% Chebyshev
Dibenz(a,h)anthracene	0.0384		0.177	99% Chebyshev
Dieldrin				NC
Endrin				NC
Endrin Ketone				NC
Fluoranthene	0.146		0.923	99% Chebyshev
Fluorene	0.0112		0.0282	95% Chebyshev
Iron	17531		21765	95% Student's-t
Naphthalene	0.0236		0.102	99% Chebyshev
Nickel	17.17		18.79	95% Student's-t
Phenanthrene	0.0998		0.595	99% Chebyshev
Pyrene	0.143		0.879	99% Chebyshev
Vanadium	20.54		22.9	95% Student's-t
LPAH	0.1806		0.888	
HPAH	0.9853		5.587	
TOTAL PAHs	1.1659		6.475	

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

NC - Not a COPC in soil.

TABLE D-2
EXPOSURE POINT CONCENTRATION (mg/kg)
SURFACE SOIL NORTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0123		0.0275	95% Chebyshev
4,4'-DDE	0.0011		0.0093	99% Chebyshev
4,4'-DDT	0.0012		0.0073	99% Chebyshev
Acenaphthene	0.0161		0.0528	95% Chebyshev
Acenaphthylene	0.0099		0.0234	95% Chebyshev
Anthracene	0.0257		0.168	99% Chebyshev
Aroclor-1254	0.0037		0.0077	95% Chebyshev
Benzo(a)anthracene	0.0715		0.72	99% Chebyshev
Benzo(a)pyrene	0.114		0.888	99% Chebyshev
Benzo(b)fluoranthene	0.146		0.352	95% Adjusted Gamma
Benzo(g,h,i)perylene	0.132		0.842	99% Chebyshev
Benzo(k)fluoranthene	0.0689		0.505	99% Chebyshev
Boron	8.028		13.49	95% Approx. Gamma
Cadmium	0.207		0.799	99% Chebyshev
Chrysene	0.102		0.812	99% Chebyshev
Dibenz(a,h)anthracene	0.0471		0.284	99% Chebyshev
Dieldrin	4.87E-04		0.0034	99% Chebyshev
Endrin	3.04E-04		7.59E-04	95% Chebyshev
Endrin Ketone	8.74E-04		0.0031	95% Chebyshev
Fluoranthene	0.159		1.358	99% Chebyshev
Fluorene	0.0163		0.0496	95% Chebyshev
Indeno(1,2,3-cd)pyrene	0.151		0.969	99% Chebyshev
Naphthalene				NS
Nickel	17.04		20.76	95% Student's-t
Phenanthrene	0.109		0.845	99% Chebyshev
Pyrene	0.147		1.169	99% Chebyshev
Vanadium	19.66		23.4	95% Student's-t
LPAH	0.1893		1.1663	
HPAH	1.1385		7.899	
TOTAL PAHs	1.3278		9.0653	

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

NS - Not sampled in surface soil.

TOXICITY REFERENCE VALUES

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
Fluorene																		
Indeno(1,2,3-cd)pyrene																		
#REF!	1700	EPA, 2005e	Geometric mean of MATC values for one test species under different pH	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63	EPA, 2005e	Avian TRV	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
#REF!																		
#REF!																		
#REF!																		
#REF!	2.5	EPA, 1999	Toxicity value not available -- TRV for methyl mercury was used as a surrogate	1.01	EPA, 1999	Chronic (6-months) NOAEL for reproduction in mink (dose 1.01 with uncertainty factor of 1)	1.01	EPA, 1999	Chronic (6-months) NOAEL for reproduction in mink (dose 1.01 with uncertainty factor of 1)	3.25	EPA, 1999	Avian TRV	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)
#REF!																		
Naphthalene																		
Nickel	280	EPA, 2007d	Geometric mean of MATC values for five species under different test conditions	1.7	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.7	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71	EPA, 2007d	Avian TRV	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Phenanthrene																		
Pyrene																		
Vanadium	100	EPA, 2005d	LOAEC/NOAEC for growth in broccoli -- used as a surrogate for invertebrates	4.16	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.16	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.344	EPA, 2005d	Avian TRV	0.344	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.344	EPA, 2005d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
#REF!	120	EPA, 2007e	Geometric mean of the MATC and EC10 values for three test species under different test species	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	66.1	EPA, 2007e	Avian TRV	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups
LPAH	29	EPA, 2007b		65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6		Mammalian TRV	65.6		Mammalian TRV	65.6		Mammalian TRV
HPAH	18	EPA, 2007b		0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615		Mammalian TRV	0.615		Mammalian TRV	0.615		Mammalian TRV
TOTAL PAHs																		

Notes:

EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE D-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
EARTHWORM

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
2-Methylnaphthalene	1.03E-02	1.98E-02			
4,4'-DDE	7.00E-04	2.40E-03	4.30E-02	1.63E-02	5.58E-02
4,4'-DDT	7.04E-04	3.80E-03	4.30E-02	1.64E-02	8.84E-02
Acenaphthene	1.42E-02	3.60E-02			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	2.15E-02	1.07E-01			
Aroclor-1254	5.60E-03	1.68E-02	2.51E+00	2.23E-03	6.69E-03
Benzo(a)anthracene	6.80E-02	4.64E-01			
Benzo(a)pyrene	9.22E-02	5.54E-01			
Benzo(b)fluoranthene	1.20E-01	6.49E-01			
Benzo(g,h,i)perylene	9.61E-02	4.94E-01			
Benzo(k)fluoranthene	6.01E-02	3.41E-01			
Boron	7.58E+00	2.06E+01			
Cadmium	1.93E-01	5.90E-01	1.00E+01	1.93E-02	5.90E-02
Chrysene	8.85E-02	5.29E-01			
Dibenz(a,h)anthracene	3.84E-02	1.77E-01			
Dieldrin	0.00E+00	0.00E+00			
Endrin	0.00E+00	0.00E+00			
Endrin Ketone	0.00E+00	0.00E+00			
Fluoranthene	1.46E-01	9.23E-01			
Fluorene	1.12E-02	2.82E-02			
Indeno(1,2,3-cd)pyrene	1.33E-01	5.77E-01			
Naphthalene	2.36E-02	1.02E-01			
Nickel	1.72E+01	1.88E+01	2.80E+02	6.13E-02	6.71E-02
Phenanthrene	9.98E-02	5.95E-01			
Pyrene	1.43E-01	8.79E-01			
Vanadium	2.05E+01	2.29E+01	1.00E+02	2.05E-01	2.29E-01
LPAH	1.81E-01	8.88E-01	2.90E+01	6.23E-03	3.06E-02
HPAH	9.85E-01	5.59E+00	1.80E+01	5.47E-02	3.10E-01
TOTAL PAHs	1.17E+00	6.48E+00			

**TABLE D-5
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE**

SOIL INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Soil concentration (mg/kg)	see data page		
IR	Ingestion rate of soil (kg/day)	2.13E-05	EPA, 1999 (normalized for bw)	
AF	Chemical Bioavailability in soil (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	1.48E-02	EPA, 1999	

Chemical	Average Sc	RME Sc	Average Intake	RME Intake
2-Methylnaphthalene	1.03E-02	1.98E-02	1.48E-05	2.85E-05
4,4'-DDE	7.00E-04	2.40E-03	1.01E-06	3.45E-06
4,4'-DDT	7.04E-04	3.80E-03	1.01E-06	5.47E-06
Acenaphthene	1.42E-02	3.60E-02	2.04E-05	5.18E-05
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	2.15E-02	1.07E-01	3.09E-05	1.54E-04
Aroclor-1254	5.60E-03	1.68E-02	8.06E-06	2.42E-05
Benzo(a)anthracene	6.80E-02	4.64E-01	9.79E-05	6.68E-04
Benzo(a)pyrene	9.22E-02	5.54E-01	1.33E-04	7.97E-04
Benzo(b)fluoranthene	1.20E-01	6.49E-01	1.73E-04	9.34E-04
Benzo(g,h,i)perylene	9.61E-02	4.94E-01	1.38E-04	7.11E-04
Benzo(k)fluoranthene	6.01E-02	3.41E-01	8.65E-05	4.91E-04
Boron	7.58E+00	2.06E+01	1.09E-02	2.96E-02
Cadmium	1.93E-01	5.90E-01	2.78E-04	8.49E-04
Chrysene	8.85E-02	5.29E-01	1.27E-04	7.61E-04
Dibenz(a,h)anthracene	3.84E-02	1.77E-01	5.53E-05	2.55E-04
Dieldrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	1.46E-01	9.23E-01	2.10E-04	1.33E-03
Fluorene	1.12E-02	2.82E-02	1.61E-05	4.06E-05
Indeno(1,2,3-cd)pyrene	1.33E-01	5.77E-01	1.91E-04	8.30E-04
Naphthalene	2.36E-02	1.02E-01	3.40E-05	1.47E-04
Nickel	1.72E+01	1.88E+01	2.47E-02	2.70E-02
Phenanthrene	9.98E-02	5.95E-01	1.44E-04	8.56E-04
Pyrene	1.43E-01	8.79E-01	2.06E-04	1.27E-03
Vanadium	2.05E+01	2.29E+01	2.96E-02	3.30E-02
LPAH	1.81E-01	8.88E-01	2.60E-04	1.28E-03
HPAH	9.85E-01	5.59E+00	1.42E-03	8.04E-03
TOTAL PAHs	1.17E+00	6.48E+00	1.68E-03	9.32E-03

FOOD INGESTION				
INTAKE = ((Ca * IR * Dfa * AUF) / (BW) + ((Cp * IR * Dfs * AUF)/(BW))				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ca	Arthropod concentration (mg/kg)	see FoodConc page		
Cp	Plant concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of of food (kg/day)	8.87E-03	EPA, 1999 (normalized for bw)	
Dfa	Dietary fraction of arthropods (unitless)	5.60E-01	EPA, 1993	
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)	4.40E-01	EPA, 1993	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	1.48E-02	EPA, 1999	

Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
----------	----------------------	------------------	------------------	--------------	-------------------	---------------

**TABLE D-5
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE**

2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	8.82E-04	3.02E-03	6.56E-06	2.25E-05	2.98E-04	1.02E-03
4,4'-DDT	8.87E-04	4.79E-03	6.60E-06	3.56E-05	2.99E-04	1.62E-03
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	6.33E-03	1.90E-02	5.60E-05	1.68E-04	2.14E-03	6.42E-03
Benzo(a)anthracene	2.04E-03	1.39E-02	1.37E-03	9.37E-03	1.05E-03	7.14E-03
Benzo(a)pyrene	6.45E-03	3.88E-02	9.31E-04	5.60E-03	2.41E-03	1.45E-02
Benzo(b)fluoranthene	8.40E-03	4.54E-02	1.21E-03	6.55E-03	3.14E-03	1.70E-02
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	4.81E-03	2.73E-02	6.07E-04	3.44E-03	1.77E-03	1.01E-02
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	1.85E-01	5.66E-01	7.03E-02	2.15E-01	8.07E-02	2.47E-01
Chrysene	3.54E-03	2.12E-02	1.65E-03	9.89E-03	1.62E-03	9.71E-03
Dibenz(a,h)anthracene	2.69E-03	1.24E-02	2.46E-04	1.13E-03	9.67E-04	4.46E-03
Dieldrin	7.15E-03	5.00E-02	1.70E-05	1.19E-04	2.41E-03	1.68E-02
Endrin	0.00E+00	0.00E+00	1.75E-05	4.37E-05	4.62E-06	1.15E-05
Endrin Ketone	0.00E+00	0.00E+00	5.03E-05	1.79E-04	1.33E-05	4.71E-05
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.06E-02	4.62E-02	5.19E-04	2.25E-03	3.71E-03	1.61E-02
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	3.43E-01	3.76E-01	5.49E-01	6.01E-01	2.60E-01	2.85E-01
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LPAH	1.26E-02	6.22E-02	3.65E-03	1.79E-02	5.20E-03	2.56E-02
HPAH	6.90E-02	3.91E-01	1.99E-02	1.13E-01	2.84E-02	1.61E-01
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TOTAL INTAKE

INTAKE = Soil Intake + Food Intake

Chemical	TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene	1.48E-05	2.85E-05
4,4'-DDE	2.99E-04	1.02E-03
4,4'-DDT	3.00E-04	1.62E-03
Acenaphthene	2.04E-05	5.18E-05
Acenaphthylene	0.00E+00	0.00E+00
Anthracene	3.09E-05	1.54E-04
Aroclor-1254	2.15E-03	6.44E-03
Benzo(a)anthracene	1.14E-03	7.81E-03
Benzo(a)pyrene	2.54E-03	1.53E-02
Benzo(b)fluoranthene	3.31E-03	1.79E-02
Benzo(g,h,i)perylene	1.38E-04	7.11E-04
Benzo(k)fluoranthene	1.86E-03	1.06E-02
Boron	1.09E-02	2.96E-02
Cadmium	8.10E-02	2.48E-01
Chrysene	1.75E-03	1.05E-02
Dibenz(a,h)anthracene	1.02E-03	4.71E-03
Dieldrin	2.41E-03	1.68E-02
Endrin	4.62E-06	1.15E-05
Endrin Ketone	1.33E-05	4.71E-05
Fluoranthene	2.10E-04	1.33E-03
Fluorene	1.61E-05	4.06E-05
Indeno(1,2,3-cd)pyrene	3.90E-03	1.69E-02
Naphthalene	3.40E-05	1.47E-04
Nickel	2.85E-01	3.12E-01
Phenanthrene	1.44E-04	8.56E-04
Pyrene	2.06E-04	1.27E-03

TABLE D-5
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE

Vanadium	2.96E-02	3.30E-02
LPAH	5.46E-03	2.69E-02
HPAH	2.98E-02	1.69E-01
TOTAL PAHs	1.68E-03	9.32E-03

**TABLE D-6
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
COYOTE**

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * Dfb * AUF) / (BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
Dfb	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	1.91E-05	6.54E-05	1.15E-05	3.94E-05	1.72E-06	5.89E-06
4,4'-DDT	1.92E-05	1.04E-04	1.16E-05	6.24E-05	1.73E-06	9.33E-06
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	1.36E-04	4.09E-04	8.21E-05	2.46E-04	1.23E-05	3.68E-05
Benzo(a)anthracene	4.90E-04	3.34E-03	2.95E-04	2.01E-03	4.41E-05	3.01E-04
Benzo(a)pyrene	1.88E-03	1.13E-02	1.13E-03	6.80E-03	1.69E-04	1.02E-03
Benzo(b)fluoranthene	2.89E-03	1.56E-02	1.73E-03	9.38E-03	2.60E-04	1.41E-03
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.44E-03	8.17E-03	8.62E-04	4.89E-03	1.30E-04	7.35E-04
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	1.39E-05	4.25E-05	9.38E-05	2.87E-02	2.36E-04	7.20E-04
Chrysene	7.34E-04	4.39E-03	4.42E-04	2.64E-03	6.61E-05	3.95E-04
Dibenz(a,h)anthracene	2.04E-03	9.42E-03	1.23E-03	5.68E-03	1.84E-04	8.49E-04
Dieldrin	2.75E-06	1.92E-05	1.79E-06	1.25E-05	2.51E-07	1.75E-06
Endrin	7.20E-07	1.80E-06	4.71E-07	1.18E-06	6.58E-08	1.64E-07
Endrin Ketone	2.07E-06	7.35E-06	1.35E-06	4.81E-06	1.89E-07	6.71E-07
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.65E-02	7.17E-02	9.94E-03	4.31E-02	1.49E-03	6.46E-03
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	6.20E-02	6.78E-02	0.00E+00	0.00E+00	4.65E-03	5.09E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LPAH	9.61E-03	4.73E-02	5.80E-03	2.85E-02	8.66E-04	4.26E-03
HPAH	5.24E-02	2.97E-01	3.16E-02	1.79E-01	4.72E-03	2.68E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE D-7
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
RAT SNAKE**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition	Value	Reference					
Intake	Intake of chemical (mg/kg-day)	calculated						
Sc	Soil concentration (mg/kg)	see data page						
IR	Ingestion rate of soil (kg/day)	1.45E-04	EPA, 1993 *					
AF	Chemical Bioavailability in soil (unitless)	1	EPA, 1997					
AUF	Area Use Factor	1	EPA, 1997					
BW	Body weight (kg)	1.39E-01	EPA, 1993					
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
2-Methylnaphthalene	1.03E-02	1.98E-02	1.07E-05	2.06E-05				
4,4'-DDE	7.00E-04	2.40E-03	7.28E-07	2.50E-06				
4,4'-DDT	7.04E-04	3.80E-03	7.32E-07	3.95E-06				
Acenaphthene	1.42E-02	3.60E-02	1.48E-05	3.74E-05				
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Anthracene	2.15E-02	1.07E-01	2.24E-05	1.11E-04				
Aroclor-1254	5.60E-03	1.68E-02	5.82E-06	1.75E-05				
Benzo(a)anthracene	6.80E-02	4.64E-01	7.07E-05	4.83E-04				
Benzo(a)pyrene	9.22E-02	5.54E-01	9.59E-05	5.76E-04				
Benzo(b)fluoranthene	1.20E-01	6.49E-01	1.25E-04	6.75E-04				
Benzo(g,h,i)perylene	9.61E-02	4.94E-01	9.99E-05	5.14E-04				
Benzo(k)fluoranthene	6.01E-02	3.41E-01	6.25E-05	3.55E-04				
Boron	7.58E+00	2.06E+01	7.88E-03	2.14E-02				
Cadmium	1.93E-01	5.90E-01	2.01E-04	6.14E-04				
Chrysene	8.85E-02	5.29E-01	9.20E-05	5.50E-04				
Dibenz(a,h)anthracene	3.84E-02	1.77E-01	3.99E-05	1.84E-04				
Dieldrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Endrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Fluoranthene	1.46E-01	9.23E-01	1.52E-04	9.60E-04				
Fluorene	1.12E-02	2.82E-02	1.16E-05	2.93E-05				
Indeno(1,2,3-cd)pyrene	1.33E-01	5.77E-01	1.38E-04	6.00E-04				
Naphthalene	2.36E-02	1.02E-01	2.45E-05	1.06E-04				
Nickel	1.72E+01	1.88E+01	1.79E-02	1.95E-02				
Phenanthrene	9.98E-02	5.95E-01	1.04E-04	6.19E-04				
Pyrene	1.43E-01	8.79E-01	1.49E-04	9.14E-04				
Vanadium	2.05E+01	2.29E+01	2.14E-02	2.38E-02				
LPAH	1.81E-01	8.88E-01	1.88E-04	9.24E-04				
HPAH	9.85E-01	5.59E+00	1.02E-03	5.81E-03				
TOTAL PAHs	1.17E+00	6.48E+00	1.21E-03	6.73E-03				
FOOD INGESTION								
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))								
Parameter	Definition	Value	Reference					
Intake	Intake of chemical (mg/kg-day)	calculated						
Cb	Bird concentration (mg/kg)	see FoodConc page						
Ca	Arthropod concentration (mg/kg)	see FoodConc page						
Cm	Mammal concentration (mg/kg)	see FoodConc page						
IR	Ingestion rate of food (kg/day)	2.78E-03	EPA, 1993 (normalized for bw)					
Dfb	Dietary fraction of birds (unitless)	1.80E-01	EPA, 1993					
DFa	Dietary fraction of arthropods (unitless)	2.00E-01	EPA, 1993					
DFm	Dietary fraction of small mammals (unitless)	6.20E-01	EPA, 1993					
AUF	Area Use Factor	1	EPA, 1997					
BW	Body weight (kg)	1.39E-01	EPA, 1993					
Chemical	Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	1.15E-05	3.94E-05	8.82E-04	3.02E-03	1.91E-05	6.54E-05	3.81E-06	1.30E-05
4,4'-DDT	1.16E-05	6.24E-05	8.87E-04	4.79E-03	1.92E-05	1.04E-04	3.83E-06	2.07E-05
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	8.21E-05	2.46E-04	6.33E-03	1.90E-02	1.36E-04	4.09E-04	2.73E-05	8.19E-05

**TABLE D-7
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
RAT SNAKE**

Benzo(a)anthracene	2.95E-04	2.01E-03	2.04E-03	1.39E-02	4.90E-04	3.34E-03	1.53E-05	1.04E-04
Benzo(a)pyrene	1.13E-03	6.80E-03	6.45E-03	3.88E-02	1.88E-03	1.13E-02	5.32E-05	3.19E-04
Benzo(b)fluoranthene	1.73E-03	9.38E-03	8.40E-03	4.54E-02	2.89E-03	1.56E-02	7.56E-05	4.09E-04
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	8.62E-04	4.89E-03	4.81E-03	2.73E-02	1.44E-03	8.17E-03	4.02E-05	2.28E-04
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	9.38E-03	2.87E-02	1.85E-01	5.66E-01	1.39E-05	4.25E-05	7.75E-04	2.37E-03
Chrysene	4.42E-04	2.64E-03	3.54E-03	2.12E-02	7.34E-04	4.39E-03	2.48E-05	1.49E-04
Dibenz(a,h)anthracene	1.23E-03	5.68E-03	2.69E-03	1.24E-02	2.04E-03	9.42E-03	4.05E-05	1.87E-04
Dieldrin	1.79E-06	1.25E-05	7.15E-03	5.00E-02	2.75E-06	1.92E-05	2.87E-05	2.00E-04
Endrin	4.71E-07	1.18E-06	0.00E+00	0.00E+00	7.20E-07	1.80E-06	1.06E-08	2.65E-08
Endrin Ketone	1.35E-06	4.81E-06	0.00E+00	0.00E+00	2.07E-06	7.35E-06	3.06E-08	1.08E-07
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	9.94E-03	4.31E-02	1.06E-02	4.62E-02	1.65E-02	7.17E-02	2.83E-04	1.23E-03
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	0.00E+00	0.00E+00	3.43E-01	3.76E-01	6.20E-02	6.78E-02	2.14E-03	2.34E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LPAH	5.80E-03	2.85E-02	1.26E-02	6.22E-02	9.61E-03	4.73E-02	1.91E-04	9.37E-04
HPAH	3.16E-02	1.79E-01	6.90E-02	3.91E-01	5.24E-02	2.97E-01	1.04E-03	5.90E-03
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical							TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene							1.07E-05	2.06E-05
4,4'-DDE							4.53E-06	1.55E-05
4,4'-DDT							4.56E-06	2.46E-05
Acenaphthene							1.48E-05	3.74E-05
Acenaphthylene							0.00E+00	0.00E+00
Anthracene							2.24E-05	1.11E-04
Aroclor-1254							3.31E-05	9.94E-05
Benzo(a)anthracene							8.60E-05	5.87E-04
Benzo(a)pyrene							1.49E-04	8.96E-04
Benzo(b)fluoranthene							2.00E-04	1.08E-03
Benzo(g,h,i)perylene							9.99E-05	5.14E-04
Benzo(k)fluoranthene							1.03E-04	5.83E-04
Boron							7.88E-03	2.14E-02
Cadmium							9.76E-04	2.98E-03
Chrysene							1.17E-04	6.99E-04
Dibenz(a,h)anthracene							8.05E-05	3.71E-04
Dieldrin							2.87E-05	2.00E-04
Endrin							1.06E-08	2.65E-08
Endrin Ketone							3.06E-08	1.08E-07
Fluoranthene							1.52E-04	9.60E-04
Fluorene							1.16E-05	2.93E-05
Indeno(1,2,3-cd)pyrene							4.22E-04	1.83E-03
Naphthalene							2.45E-05	1.06E-04
Nickel							2.00E-02	2.19E-02
Phenanthrene							1.04E-04	6.19E-04
Pyrene							1.49E-04	9.14E-04
Vanadium							2.14E-02	2.38E-02
LPAH							3.78E-04	1.86E-03
HPAH							2.06E-03	1.17E-02
TOTAL PAHs							1.21E-03	6.73E-03

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

**TABLE D-8
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
AMERICAN ROBIN**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Sc	Soil concentration (mg/kg)	see data page						
IR	Ingestion rate of soil (kg/day)	1.14E-03		EPA, 1999 (normalized for bw)				
AF	Chemical Bioavailability in soil (unitless)	1		EPA, 1997				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	8.00E-02		EPA, 1999				
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
2-Methylnaphthalene	1.23E-02	2.75E-02	1.75E-04	3.92E-04				
4,4'-DDE	1.10E-03	9.30E-03	1.57E-05	1.33E-04				
4,4'-DDT	1.20E-03	7.30E-03	1.71E-05	1.04E-04				
Acenaphthene	1.61E-02	5.28E-02	2.29E-04	7.52E-04				
Acenaphthylene	9.90E-03	2.34E-02	1.41E-04	3.33E-04				
Anthracene	2.57E-02	1.68E-01	3.66E-04	2.39E-03				
Aroclor-1254	3.70E-03	7.70E-03	5.27E-05	1.10E-04				
Benzo(a)anthracene	7.15E-02	7.20E-01	1.02E-03	1.03E-02				
Benzo(a)pyrene	1.14E-01	8.88E-01	1.62E-03	1.27E-02				
Benzo(b)fluoranthene	1.46E-01	3.52E-01	2.08E-03	5.02E-03				
Benzo(g,h,i)perylene	1.32E-01	8.42E-01	1.88E-03	1.20E-02				
Benzo(k)fluoranthene	6.89E-02	5.05E-01	9.82E-04	7.20E-03				
Boron	8.03E+00	1.35E+01	1.14E-01	1.92E-01				
Cadmium	2.07E-01	7.99E-01	2.95E-03	1.14E-02				
Chrysene	1.02E-01	8.12E-01	1.45E-03	1.16E-02				
Dibenz(a,h)anthracene	4.71E-02	2.84E-01	6.71E-04	4.05E-03				
Dieldrin	4.87E-04	3.40E-03	6.93E-06	4.85E-05				
Endrin	3.04E-04	7.59E-04	4.33E-06	1.08E-05				
Endrin Ketone	8.74E-04	3.10E-03	1.25E-05	4.42E-05				
Fluoranthene	1.59E-01	1.36E+00	2.27E-03	1.94E-02				
Fluorene	1.63E-02	4.96E-02	2.32E-04	7.07E-04				
Indeno(1,2,3-cd)pyrene	1.51E-01	9.69E-01	2.15E-03	1.38E-02				
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
Nickel	1.70E+01	2.08E+01	2.43E-01	2.96E-01				
Phenanthrene	1.09E-01	8.45E-01	1.55E-03	1.20E-02				
Pyrene	1.47E-01	1.17E+00	2.09E-03	1.67E-02				
Vanadium	1.97E+01	2.34E+01	2.80E-01	3.33E-01				
LPAH	1.89E-01	1.17E+00	2.70E-03	1.66E-02				
HPAH	1.14E+00	7.90E+00	1.62E-02	1.13E-01				
TOTAL PAHs	1.33E+00	9.07E+00	1.89E-02	1.29E-01				
FOOD INGESTION								
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Ce	Earthworm concentration (mg/kg)	see FoodConc page						
Ca	Arthropod concentration (mg/kg)	see FoodConc page						
Cp	Plant concentration (mg/kg)	see FoodConc page						
IR	Ingestion rate of food (kg/day)	3.52E-02		EPA, 1999 (normalized for bw)				
Dfe	Dietary fraction of earthworms (unitless)	4.60E-01		EPA, 1993				
DFa	Dietary fraction of arthropods (unitless)	4.60E-01		EPA, 1993				
DFs	Dietary fraction of plants, seeds and other vegetation (unitless)	8.00E-02		EPA, 1993				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	8.00E-02		EPA, 1999				
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	8.82E-04	3.02E-03	8.82E-04	3.02E-03	6.56E-06	2.25E-05	3.57E-04	1.22E-03
4,4'-DDT	8.87E-04	4.79E-03	8.87E-04	4.79E-03	6.60E-06	3.56E-05	3.59E-04	1.94E-03
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	6.33E-03	1.90E-02	6.33E-03	1.90E-02	5.60E-05	1.68E-04	2.56E-03	7.69E-03

**TABLE D-8
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
AMERICAN ROBIN**

Benzo(a)anthracene	2.04E-03	1.39E-02	2.04E-03	1.39E-02	1.37E-03	9.37E-03	8.74E-04	5.96E-03
Benzo(a)pyrene	6.45E-03	3.88E-02	6.45E-03	3.88E-02	9.31E-04	5.60E-03	2.65E-03	1.59E-02
Benzo(b)fluoranthene	8.40E-03	4.54E-02	8.40E-03	4.54E-02	1.21E-03	6.55E-03	3.44E-03	1.86E-02
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	4.81E-03	2.73E-02	4.81E-03	2.73E-02	6.07E-04	3.44E-03	1.97E-03	1.12E-02
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	1.85E-01	5.66E-01	1.85E-01	5.66E-01	7.03E-02	2.15E-01	7.75E-02	2.37E-01
Chrysene	3.54E-03	2.12E-02	3.54E-03	2.12E-02	1.65E-03	9.89E-03	1.49E-03	8.91E-03
Dibenz(a,h)anthracene	2.69E-03	1.24E-02	2.69E-03	1.24E-02	2.46E-04	1.13E-03	1.10E-03	5.06E-03
Dieldrin	7.15E-03	5.00E-02	7.15E-03	5.00E-02	1.70E-05	1.19E-04	2.90E-03	2.02E-02
Endrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-05	4.37E-05	6.16E-07	1.54E-06
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-05	1.79E-04	1.77E-06	6.29E-06
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.06E-02	4.62E-02	1.06E-02	4.62E-02	5.19E-04	2.25E-03	4.33E-03	1.88E-02
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	3.43E-01	3.76E-01	3.43E-01	3.76E-01	5.49E-01	6.01E-01	1.58E-01	1.73E-01
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LPAH	1.26E-02	6.22E-02	1.26E-02	6.22E-02	3.65E-03	1.79E-02	5.25E-03	2.58E-02
HPAH	6.90E-02	3.91E-01	6.90E-02	3.91E-01	1.99E-02	1.13E-01	2.86E-02	1.62E-01
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical	TOTAL Average Intake						TOTAL RME Intake	
2-Methylnaphthalene	1.75E-04						3.92E-04	
4,4'-DDE	3.73E-04						1.36E-03	
4,4'-DDT	3.76E-04						2.04E-03	
Acenaphthene	2.29E-04						7.52E-04	
Acenaphthylene	1.41E-04						3.33E-04	
Anthracene	3.66E-04						2.39E-03	
Aroclor-1254	2.62E-03						7.80E-03	
Benzo(a)anthracene	1.89E-03						1.62E-02	
Benzo(a)pyrene	4.27E-03						2.85E-02	
Benzo(b)fluoranthene	5.52E-03						2.36E-02	
Benzo(g,h,i)perylene	1.88E-03						1.20E-02	
Benzo(k)fluoranthene	2.95E-03						1.84E-02	
Boron	1.14E-01						1.92E-01	
Cadmium	8.04E-02						2.48E-01	
Chrysene	2.94E-03						2.05E-02	
Dibenz(a,h)anthracene	1.77E-03						9.10E-03	
Dieldrin	2.90E-03						2.03E-02	
Endrin	4.95E-06						1.24E-05	
Endrin Ketone	1.42E-05						5.05E-05	
Fluoranthene	2.27E-03						1.94E-02	
Fluorene	2.32E-04						7.07E-04	
Indeno(1,2,3-cd)pyrene	6.48E-03						3.26E-02	
Naphthalene	0.00E+00						0.00E+00	
Nickel	4.01E-01						4.69E-01	
Phenanthrene	1.55E-03						1.20E-02	
Pyrene	2.09E-03						1.67E-02	
Vanadium	2.80E-01						3.33E-01	
LPAH	7.94E-03						4.24E-02	
HPAH	4.48E-02						2.75E-01	
TOTAL PAHs	1.89E-02						1.29E-01	

TABLE D-9
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
RED-TAILED HAWK

FOOD INGESTION						
$\text{INTAKE} = ((\text{Cm} * \text{IR} * \text{Dfm} * \text{AUF}) / (\text{BW})) + (\text{Cb} * \text{IR} * \text{DFb} * \text{AUF}) / (\text{BW}))$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01		EPA, 1999 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01		EPA, 1993		
DFb	Dietary fraction of birds (unitless)	2.15E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	9.60E-01		EPA, 1999		

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	1.91E-05	6.54E-05	1.15E-05	3.94E-05	3.23E-06	1.11E-05
4,4'-DDT	1.92E-05	1.04E-04	1.16E-05	6.24E-05	3.25E-06	1.75E-05
Acenaphthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor-1254	1.36E-04	4.09E-04	8.21E-05	2.46E-04	2.31E-05	6.92E-05
Benzo(a)anthracene	4.90E-04	3.34E-03	2.95E-04	2.01E-03	8.29E-05	5.66E-04
Benzo(a)pyrene	1.88E-03	1.13E-02	1.13E-03	6.80E-03	3.18E-04	1.91E-03
Benzo(b)fluoranthene	2.89E-03	1.56E-02	1.73E-03	9.38E-03	4.88E-04	2.64E-03
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.44E-03	8.17E-03	8.62E-04	4.89E-03	2.43E-04	1.38E-03
Boron	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	1.39E-05	4.25E-05	9.38E-03	2.87E-02	3.75E-04	1.15E-03
Chrysene	7.34E-04	4.39E-03	4.42E-04	2.64E-03	1.24E-04	7.42E-04
Dibenz(a,h)anthracene	2.04E-03	9.42E-03	1.23E-03	5.68E-03	3.46E-04	1.59E-03
Dieldrin	2.75E-06	1.92E-05	1.79E-06	1.25E-05	4.70E-07	3.29E-06
Endrin	7.20E-07	1.80E-06	4.71E-07	1.18E-06	1.23E-07	3.08E-07
Endrin Ketone	2.07E-06	7.35E-06	1.35E-06	4.81E-06	3.55E-07	1.26E-06
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	1.65E-02	7.17E-02	9.94E-03	4.31E-02	2.80E-03	1.21E-02
Naphthalene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	6.20E-02	6.78E-02	0.00E+00	0.00E+00	9.00E-03	9.85E-03
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LPAH	9.61E-03	4.73E-02	5.80E-03	2.85E-02	1.63E-03	8.00E-02
HPAH	5.24E-02	2.97E-01	3.16E-02	1.79E-01	8.87E-03	5.03E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE D-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
2-Methylnaphthalene	1.48E-05	2.85E-05			
4,4'-DDE	2.99E-04	1.02E-03	1.47E-01	2.03E-03	6.97E-03
4,4'-DDT	3.00E-04	1.62E-03	1.47E-01	2.04E-03	1.10E-02
Acenaphthene	2.04E-05	5.18E-05			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	3.09E-05	1.54E-04			
Aroclor-1254	2.15E-03	6.44E-03	1.55E-01	1.38E-02	4.15E-02
Benzo(a)anthracene	1.14E-03	7.81E-03			
Benzo(a)pyrene	2.54E-03	1.53E-02			
Benzo(b)fluoranthene	3.31E-03	1.79E-02			
Benzo(g,h,i)perylene	1.38E-04	7.11E-04			
Benzo(k)fluoranthene	1.86E-03	1.06E-02			
Boron	1.09E-02	2.96E-02			
Cadmium	8.10E-02	2.48E-01	7.70E-01	1.05E-01	3.22E-01
Chrysene	1.75E-03	1.05E-02			
Dibenz(a,h)anthracene	1.02E-03	4.71E-03			
Dieldrin	2.41E-03	1.68E-02	1.50E-02	1.60E-01	1.12E+00
Endrin	4.62E-06	1.15E-05	9.20E-02	5.02E-05	1.25E-04
Endrin Ketone	1.33E-05	4.71E-05	9.20E-02	1.44E-04	5.12E-04
Fluoranthene	2.10E-04	1.33E-03			
Fluorene	1.61E-05	4.06E-05			
Indeno(1,2,3-cd)pyrene	3.90E-03	1.69E-02			
Naphthalene	3.40E-05	1.47E-04			
Nickel	2.85E-01	3.12E-01	1.70E+00	1.68E-01	1.83E-01
Phenanthrene	1.44E-04	8.56E-04			
Pyrene	2.06E-04	1.27E-03			
Vanadium	2.96E-02	3.30E-02	4.16E+00	7.11E-03	7.92E-03
LPAH	5.46E-03	2.69E-02	6.56E+01	8.33E-05	4.10E-04
HPAH	2.98E-02	1.69E-01	6.15E-01	4.85E-02	2.75E-01
TOTAL PAHs	1.68E-03	9.32E-03			

TABLE D-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
COYOTE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
2-Methylnaphthalene	0.00E+00	0.00E+00			
4,4'-DDE	1.72E-06	5.89E-06	1.47E-01	1.17E-05	4.01E-05
4,4'-DDT	1.73E-06	9.33E-06	1.47E-01	1.18E-05	6.35E-05
Acenaphthene	0.00E+00	0.00E+00			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	0.00E+00	0.00E+00			
Aroclor-1254	1.23E-05	3.68E-05	1.55E-01	7.92E-05	2.38E-04
Benzo(a)anthracene	4.41E-05	3.01E-04			
Benzo(a)pyrene	1.69E-04	1.02E-03			
Benzo(b)fluoranthene	2.60E-04	1.41E-03			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	1.30E-04	7.35E-04			
Boron	0.00E+00	0.00E+00			
Cadmium	2.36E-04	7.20E-04	7.70E-01	3.06E-04	9.35E-04
Chrysene	6.61E-05	3.95E-04			
Dibenz(a,h)anthracene	1.84E-04	8.49E-04			
Dieldrin	2.51E-07	1.75E-06	1.50E-02	1.67E-05	1.17E-04
Endrin	6.58E-08	1.64E-07	9.20E-02	7.15E-07	1.79E-06
Endrin Ketone	1.89E-07	6.71E-07	9.20E-02	2.06E-06	7.30E-06
Fluoranthene	0.00E+00	0.00E+00			
Fluorene	0.00E+00	0.00E+00			
Indeno(1,2,3-cd)pyrene	1.49E-03	6.46E-03			
Naphthalene	0.00E+00	0.00E+00			
Nickel	4.65E-03	5.09E-03	1.70E+00	2.73E-03	2.99E-03
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Vanadium	0.00E+00	0.00E+00	4.16E+00	0.00E+00	0.00E+00
LPAH	8.66E-04	4.26E-03	6.56E+01	1.32E-05	6.49E-05
HPAH	4.72E-03	2.68E-02	6.15E-01	7.68E-03	4.36E-02
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE D-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
2-Methylnaphthalene	1.07E-05	2.06E-05			
4,4'-DDE	4.53E-06	1.55E-05	2.27E-01	2.00E-05	6.85E-05
4,4'-DDT	4.56E-06	2.46E-05	2.27E-01	2.01E-05	1.08E-04
Acenaphthene	1.48E-05	3.74E-05			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	2.24E-05	1.11E-04			
Aroclor-1254	3.31E-05	9.94E-05	1.80E-01	1.84E-04	5.52E-04
Benzo(a)anthracene	8.60E-05	5.87E-04			
Benzo(a)pyrene	1.49E-04	8.96E-04			
Benzo(b)fluoranthene	2.00E-04	1.08E-03			
Benzo(g,h,i)perylene	9.99E-05	5.14E-04			
Benzo(k)fluoranthene	1.03E-04	5.83E-04			
Boron	7.88E-03	2.14E-02			
Cadmium	9.76E-04	2.98E-03	1.45E+00	6.73E-04	2.06E-03
Chrysene	1.17E-04	6.99E-04			
Dibenz(a,h)anthracene	8.05E-05	3.71E-04			
Dieldrin	2.87E-05	2.00E-04	7.09E-02	4.04E-04	2.82E-03
Endrin	1.06E-08	2.65E-08	1.00E-02	1.06E-06	2.65E-06
Endrin Ketone	3.06E-08	1.08E-07	1.00E-02	3.06E-06	1.08E-05
Fluoranthene	1.52E-04	9.60E-04			
Fluorene	1.16E-05	2.93E-05			
Indeno(1,2,3-cd)pyrene	4.22E-04	1.83E-03			
Naphthalene	2.45E-05	1.06E-04			
Nickel	2.00E-02	2.19E-02	6.71E+00	2.98E-03	3.26E-03
Phenanthrene	1.04E-04	6.19E-04			
Pyrene	1.49E-04	9.14E-04			
Vanadium	2.14E-02	2.38E-02	3.44E-01	6.21E-02	6.92E-02
LPAH	3.78E-04	1.86E-03	6.56E+01	5.77E-06	2.84E-05
HPAH	2.06E-03	1.17E-02	6.15E-01	3.36E-03	1.90E-02
TOTAL PAHs	1.21E-03	6.73E-03			

TABLE D-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
AMERICAN ROBIN

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
2-Methylnaphthalene	1.75E-04	3.92E-04			
4,4'-DDE	3.73E-04	1.36E-03	2.27E-01	1.64E-03	5.98E-03
4,4'-DDT	3.76E-04	2.04E-03	2.27E-01	1.66E-03	9.00E-03
Acenaphthene	2.29E-04	7.52E-04			
Acenaphthylene	1.41E-04	3.33E-04			
Anthracene	3.66E-04	2.39E-03			
Aroclor-1254	2.62E-03	7.80E-03	1.80E-01	1.45E-02	4.33E-02
Benzo(a)anthracene	1.89E-03	1.62E-02			
Benzo(a)pyrene	4.27E-03	2.85E-02			
Benzo(b)fluoranthene	5.52E-03	2.36E-02			
Benzo(g,h,i)perylene	1.88E-03	1.20E-02			
Benzo(k)fluoranthene	2.95E-03	1.84E-02			
Boron	1.14E-01	1.92E-01			
Cadmium	8.04E-02	2.48E-01	1.47E+00	5.47E-02	1.69E-01
Chrysene	2.94E-03	2.05E-02			
Dibenz(a,h)anthracene	1.77E-03	9.10E-03			
Dieldrin	2.90E-03	2.03E-02	7.09E-02	4.09E-02	2.86E-01
Endrin	4.95E-06	1.24E-05	1.00E-02	4.95E-04	1.24E-03
Endrin Ketone	1.42E-05	5.05E-05	1.00E-02	1.42E-03	5.05E-03
Fluoranthene	2.27E-03	1.94E-02			
Fluorene	2.32E-04	7.07E-04			
Indeno(1,2,3-cd)pyrene	6.48E-03	3.26E-02			
Naphthalene	0.00E+00	0.00E+00			
Nickel	4.01E-01	4.69E-01	6.71E+00	5.98E-02	6.99E-02
Phenanthrene	1.55E-03	1.20E-02			
Pyrene	2.09E-03	1.67E-02			
Vanadium	2.80E-01	3.33E-01	3.44E-01	8.14E-01	9.69E-01
LPAH	7.94E-03	4.24E-02	6.56E+01	1.21E-04	6.47E-04
HPAH	4.48E-02	2.75E-01	6.15E-01	7.29E-02	4.47E-01
TOTAL PAHs	1.89E-02	1.29E-01			

TABLE D-14
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
2-Methylnaphthalene	0.00E+00	0.00E+00			
4,4'-DDE	3.23E-06	1.11E-05	2.27E-01	1.42E-05	4.88E-05
4,4'-DDT	3.25E-06	1.75E-05	2.27E-01	1.43E-05	7.72E-05
Acenaphthene	0.00E+00	0.00E+00			
Acenaphthylene	0.00E+00	0.00E+00			
Anthracene	0.00E+00	0.00E+00			
Aroclor-1254	2.31E-05	6.92E-05	1.80E-01	1.28E-04	3.85E-04
Benzo(a)anthracene	8.29E-05	5.66E-04			
Benzo(a)pyrene	3.18E-04	1.91E-03			
Benzo(b)fluoranthene	4.88E-04	2.64E-03			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	2.43E-04	1.38E-03			
Boron	0.00E+00	0.00E+00			
Cadmium	3.75E-04	1.15E-03	1.47E+00	2.55E-04	7.80E-04
Chrysene	1.24E-04	7.42E-04			
Dibenz(a,h)anthracene	3.46E-04	1.59E-03			
Dieldrin	4.70E-07	3.29E-06	7.09E-02	6.64E-06	4.64E-05
Endrin	1.23E-07	3.08E-07	1.00E-02	1.23E-05	3.08E-05
Endrin Ketone	3.55E-07	1.26E-06	1.00E-02	3.55E-05	1.26E-04
Fluoranthene	0.00E+00	0.00E+00			
Fluorene	0.00E+00	0.00E+00			
Indeno(1,2,3-cd)pyrene	2.80E-03	1.21E-02			
Naphthalene	0.00E+00	0.00E+00			
Nickel	9.00E-03	9.85E-03	6.71E+00	1.34E-03	1.47E-03
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Vanadium	0.00E+00	0.00E+00	3.44E-01	0.00E+00	0.00E+00
LPAH	1.63E-03	8.00E-03	6.56E+01	2.48E-05	1.22E-04
HPAH	8.87E-03	5.03E-02	6.15E-01	1.44E-02	8.18E-02
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE D-15
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Food = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
2-Methylnaphthalene	1.03E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
4,4'-DDE	7.00E-04	1.26E+00	8.82E-04 EPA, 1999		1.26E+00	8.82E-04 EPA, 1999		9.37E-03	6.56E-06 EPA, 1999		2.72E-02	1.90E-05 EPA, 1999		6.52E-05	4.56E-08 EPA, 1999		1.91E-05	1.59E-02	1.11E-05 EPA, 1999		5.10E-04	3.57E-07 EPA, 1999		1.15E-05
4,4'-DDT	7.04E-04	1.26E+00	8.87E-04 EPA, 1999		1.26E+00	8.87E-04 EPA, 1999		9.37E-03	6.60E-06 EPA, 1999		2.72E-02	1.91E-05 EPA, 1999		6.52E-05	4.59E-08 EPA, 1999		1.92E-05	1.59E-02	1.12E-05 EPA, 1999		5.10E-04	3.59E-07 EPA, 1999		1.16E-05
Acenaphthene	1.42E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Acenaphthylene	0.00E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Anthracene	2.15E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Aroclor-1254	5.60E-03	1.13E+00	6.33E-03 EPA, 1999		1.13E+00	6.33E-03 EPA, 1999		1.00E-02	5.60E-05 EPA, 1999		2.43E-02	1.36E-04 EPA, 1999		5.83E-05	3.26E-07 EPA, 1999		1.36E-04	1.42E-02	7.95E-05 EPA, 1999		4.55E-04	2.55E-06 EPA, 1999		8.21E-05
Benzo(a)anthracene	6.80E-02	3.00E-02	2.04E-03 EPA, 1999		3.00E-02	2.04E-03 EPA, 1999		2.02E-02	1.37E-03 EPA, 1999		7.19E-03	4.89E-04 EPA, 1999		1.73E-05	1.18E-06 EPA, 1999		4.90E-04	4.20E-03	2.86E-04 EPA, 1999		1.35E-04	9.18E-06 EPA, 1999		2.95E-04
Benzo(a)pyrene	9.22E-02	7.00E-02	6.45E-03 EPA, 1999		7.00E-02	6.45E-03 EPA, 1999		1.01E-02	9.31E-04 EPA, 1999		2.03E-02	1.87E-03 EPA, 1999		4.86E-05	4.48E-06 EPA, 1999		1.88E-03	1.19E-02	1.10E-03 EPA, 1999		3.81E-04	3.51E-05 EPA, 1999		1.13E-03
Benzo(b)fluoranthene	1.20E-01	7.00E-02	8.40E-03 EPA, 1999		7.00E-02	8.40E-03 EPA, 1999		1.01E-02	1.21E-03 EPA, 1999		2.40E-02	2.88E-03 EPA, 1999		5.75E-05	6.90E-06 EPA, 1999		2.89E-03	1.40E-02	1.68E-03 EPA, 1999		4.50E-04	5.40E-05 EPA, 1999		1.73E-03
Benzo(g,h,i)perylene	9.61E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Benzo(k)fluoranthene	6.01E-02	8.00E-02	4.81E-03 EPA, 1999		8.00E-02	4.81E-03 EPA, 1999		1.01E-02	6.07E-04 EPA, 1999		2.39E-02	1.44E-03 EPA, 1999		5.73E-05	3.44E-06 EPA, 1999		1.44E-03	1.39E-02	8.35E-04 EPA, 1999		4.48E-04	2.69E-05 EPA, 1999		8.62E-04
Boron	7.58E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Cadmium	1.93E-01	9.60E-01	1.85E-01 EPA, 1999		9.60E-01	1.85E-01 EPA, 1999		3.64E-01	7.03E-02 EPA, 1999		7.19E-05	1.39E-05 EPA, 1999		1.73E-07	3.34E-08 EPA, 1999		1.39E-05	4.71E-02	9.09E-03 EPA, 1999		1.51E-03	2.91E-04 EPA, 1999		9.38E-03
Chrysene	8.85E-02	4.00E-02	3.54E-03 EPA, 1999		4.00E-02	3.54E-03 EPA, 1999		1.87E-02	1.65E-03 EPA, 1999		8.27E-03	7.32E-04 EPA, 1999		1.99E-05	1.76E-06 EPA, 1999		7.34E-04	4.84E-03	4.28E-04 EPA, 1999		1.55E-04	1.37E-05 EPA, 1999		4.42E-04
Dibenz(a,h)anthracene	3.84E-02	7.00E-02	2.69E-03 EPA, 1999		7.00E-02	2.69E-03 EPA, 1999		6.40E-03	2.46E-04 EPA, 1999		5.31E-02	2.04E-03 EPA, 1999		1.27E-04	4.88E-06 EPA, 1999		2.04E-03	3.11E-02	1.19E-03 EPA, 1999		9.98E-04	3.83E-05 EPA, 1999		1.23E-03
Dieldrin	4.87E-04	1.47E+01	7.15E-03 EPA, 2005f		1.47E+01	7.15E-03 EPA, 2005f		3.49E-02	1.70E-05 EPA, 1998		5.65E-03	2.75E-06 EPA, 1998			0.00E+00		2.75E-06	3.68E-03	1.79E-06 EPA, 1998			0.00E+00		1.79E-06
Endrin	3.04E-04		0.00E+00			0.00E+00		5.76E-02	1.75E-05 EPA, 1998		2.37E-03	7.20E-07 EPA, 1998			0.00E+00		7.20E-07	1.55E-03	4.71E-07 EPA, 1998			0.00E+00		4.71E-07
Endrin Ketone	8.74E-04		0.00E+00			0.00E+00		5.76E-02	5.03E-05 EPA, 1998		2.37E-03	2.07E-06 EPA, 1998			0.00E+00		2.07E-06	1.55E-03	1.35E-06 EPA, 1998			0.00E+00		1.35E-06
Fluoranthene	1.46E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluorene	1.12E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Indeno(1,2,3-cd)pyrene	1.33E-01	8.00E-02	1.06E-02 EPA, 1999		8.00E-02	1.06E-02 EPA, 1999		3.90E-03	5.19E-04 EPA, 1999		1.24E-01	1.65E-02 EPA, 1999		2.98E-04	3.96E-05 EPA, 1999		1.65E-02	7.24E-02	9.63E-03 EPA, 1999		2.32E-03	3.09E-04 EPA, 1999		9.94E-03
Naphthalene	2.36E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Nickel	1.72E+01	2.00E-02	3.43E-01 EPA, 1999		2.00E-02	3.43E-01 EPA, 1999		3.20E-02	5.49E-01 EPA, 1999		3.60E-03	6.18E-02 EPA, 1999		8.63E-06	1.48E-04 EPA, 1999		6.20E-02		0.00E+00			0.00E+00		0.00E+00
Phenanthrene	9.98E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Pyrene	1.43E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Vanadium	2.05E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
LPAH	1.81E-01	7.00E-02	1.26E-02 EPA, 1999*		7.00E-02	1.26E-02 EPA, 1999*		2.02E-02	3.65E-03 EPA, 1999*		5.31E-02	9.59E-03 EPA, 1999*		1.27E-04	2.29E-05 EPA, 1999*		9.61E-03	3.11E-02	5.62E-03 EPA, 1999*		9.98E-04	1.80E-04 EPA, 1999*		5.80E-03
HPAH	9.85E-01	7.00E-02	6.90E-02 EPA, 1999*		7.00E-02	6.90E-02 EPA, 1999*		2.02E-02	1.99E-02 EPA, 1999*		5.31E-02	5.23E-02 EPA, 1999*		1.27E-04	1.25E-04 EPA, 1999*		5.24E-02	3.11E-02	3.06E-02 EPA, 1999*		9.98E-04	9.83E-04 EPA, 1999*		3.16E-02
TOTAL PAHs	1.17E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE D-16 RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)																								
Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
2-Methylnaphthalene	1.98E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
4,4'-DDE	2.40E-03	1.26E+00	3.02E-03 EPA, 1999		1.26E+00	3.02E-03 EPA, 1999		9.37E-03	2.25E-05 EPA, 1999		2.72E-02	6.53E-05 EPA, 1999		6.52E-05	1.56E-07 EPA, 1999		6.54E-05	1.59E-02	3.82E-05 EPA, 1999		5.10E-04	1.22E-06 EPA, 1999		3.94E-05
4,4'-DDT	3.80E-03	1.26E+00	4.79E-03 EPA, 1999		1.26E+00	4.79E-03 EPA, 1999		9.37E-03	3.56E-05 EPA, 1999		2.72E-02	1.03E-04 EPA, 1999		6.52E-05	2.48E-07 EPA, 1999		1.04E-04	1.59E-02	6.04E-05 EPA, 1999		5.10E-04	1.94E-06 EPA, 1999		6.24E-05
Acenaphthene	3.60E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Acenaphthylene	0.00E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Anthracene	1.07E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Aroclor-1254	1.68E-02	1.13E+00	1.90E-02 EPA, 1999		1.13E+00	1.90E-02 EPA, 1999		1.00E-02	1.68E-04 EPA, 1999		2.43E-02	4.08E-04 EPA, 1999		5.83E-05	9.79E-07 EPA, 1999		4.09E-04	1.42E-02	2.39E-04 EPA, 1999		4.55E-04	7.64E-06 EPA, 1999		2.46E-04
Benzo(a)anthracene	4.64E-01	3.00E-02	1.39E-02 EPA, 1999		3.00E-02	1.39E-02 EPA, 1999		2.02E-02	9.37E-03 EPA, 1999		7.19E-03	3.34E-03 EPA, 1999		1.73E-05	8.03E-06 EPA, 1999		3.34E-03	4.20E-03	1.95E-03 EPA, 1999		1.35E-04	6.26E-05 EPA, 1999		2.01E-03
Benzo(a)pyrene	5.54E-01	7.00E-02	3.88E-02 EPA, 1999		7.00E-02	3.88E-02 EPA, 1999		1.01E-02	5.60E-03 EPA, 1999		2.03E-02	1.12E-02 EPA, 1999		4.86E-05	2.69E-05 EPA, 1999		1.13E-02	1.19E-02	6.59E-03 EPA, 1999		3.81E-04	2.11E-04 EPA, 1999		6.80E-03
Benzo(b)fluoranthene	6.49E-01	7.00E-02	4.54E-02 EPA, 1999		7.00E-02	4.54E-02 EPA, 1999		1.01E-02	6.55E-03 EPA, 1999		2.40E-02	1.56E-02 EPA, 1999		5.75E-05	3.73E-05 EPA, 1999		1.56E-02	1.40E-02	9.09E-03 EPA, 1999		4.50E-04	2.92E-04 EPA, 1999		9.38E-03
Benzo(g,h,i)perylene	4.94E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Benzo(k)fluoranthene	3.41E-01	8.00E-02	2.73E-02 EPA, 1999		8.00E-02	2.73E-02 EPA, 1999		1.01E-02	3.44E-03 EPA, 1999		2.39E-02	8.15E-03 EPA, 1999		5.73E-05	1.95E-05 EPA, 1999		8.17E-03	1.39E-02	4.74E-03 EPA, 1999		4.48E-04	1.53E-04 EPA, 1999		4.89E-03
Boron	2.06E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Cadmium	5.90E-01	9.60E-01	5.66E-01 EPA, 1999		9.60E-01	5.66E-01 EPA, 1999		3.64E-01	2.15E-01 EPA, 1999		7.19E-05	4.24E-05 EPA, 1999		1.73E-07	1.02E-07 EPA, 1999		4.25E-05	4.71E-02	2.78E-02 EPA, 1999		1.51E-03	8.91E-04 EPA, 1999		2.87E-02
Chrysene	5.29E-01	4.00E-02	2.12E-02 EPA, 1999		4.00E-02	2.12E-02 EPA, 1999		1.87E-02	9.89E-03 EPA, 1999		8.27E-03	4.37E-03 EPA, 1999		1.99E-05	1.05E-05 EPA, 1999		4.39E-03	4.84E-03	2.56E-03 EPA, 1999		1.55E-04	8.20E-05 EPA, 1999		2.64E-03
Dibenz(a,h)anthracene	1.77E-01	7.00E-02	1.24E-02 EPA, 1999		7.00E-02	1.24E-02 EPA, 1999		6.40E-03	1.13E-03 EPA, 1999		5.31E-02	9.40E-03 EPA, 1999		1.27E-04	2.25E-05 EPA, 1999		9.42E-03	3.11E-02	5.50E-03 EPA, 1999		9.98E-04	1.77E-04 EPA, 1999		5.68E-03
Dieldrin	3.40E-03	1.47E+01	5.00E-02 EPA, 2005f		1.47E+01	5.00E-02 EPA, 2005f		3.49E-02	1.19E-04 EPA, 1998		5.65E-03	1.92E-05 EPA, 1998			0.00E+00		1.92E-05	3.68E-03	1.25E-05 EPA, 1998			0.00E+00		1.25E-05
Endrin	7.59E-04		0.00E+00			0.00E+00		5.76E-02	4.37E-05 EPA, 1998		2.37E-03	1.80E-06 EPA, 1998			0.00E+00		1.80E-06	1.55E-03	1.18E-06 EPA, 1998			0.00E+00		1.18E-06
Endrin Ketone	3.10E-03		0.00E+00			0.00E+00		5.76E-02	1.79E-04 EPA, 1998		2.37E-03	7.35E-06 EPA, 1998			0.00E+00		7.35E-06	1.55E-03	4.81E-06 EPA, 1998			0.00E+00		4.81E-06
Fluoranthene	9.23E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluorene	2.82E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Indeno(1,2,3-cd)pyrene	5.77E-01	8.00E-02	4.62E-02 EPA, 1999		8.00E-02	4.62E-02 EPA, 1999		3.90E-03	2.25E-03 EPA, 1999		1.24E-01	7.15E-02 EPA, 1999		2.98E-04	1.72E-04 EPA, 1999		7.17E-02	7.24E-02	4.18E-02 EPA, 1999		2.32E-03	1.34E-03 EPA, 1999		4.31E-02
Naphthalene	1.02E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Nickel	1.88E+01	2.00E-02	3.76E-01 EPA, 1999		2.00E-02	3.76E-01 EPA, 1999		3.20E-02	6.01E-01 EPA, 1999		3.60E-03	6.76E-02 EPA, 1999		8.63E-06	1.62E-04 EPA, 1999		6.78E-02	0.00E+00	0.00E+00			0.00E+00		0.00E+00
Phenanthrene	5.95E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Pyrene	8.79E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Vanadium	2.29E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
LPAH	8.88E-01	7.00E-02	6.22E-02 EPA, 1999*		7.00E-02	6.22E-02 EPA, 1999*		2.02E-02	1.79E-02 EPA, 1999*		5.31E-02	4.72E-02 EPA, 1999*		1.27E-04	1.13E-04 EPA, 1999*		4.73E-02	3.11E-02	2.76E-02 EPA, 1999*		9.98E-04	8.86E-04 EPA, 1999*		2.85E-02
HPAH	5.59E+00	7.00E-02	3.91E-01 EPA, 1999*		7.00E-02	3.91E-01 EPA, 1999*		2.02E-02	1.13E-01 EPA, 1999*		5.31E-02	2.97E-01 EPA, 1999*		1.27E-04	7.10E-04 EPA, 1999*		2.97E-01	3.11E-02	1.74E-01 EPA, 1999*		9.98E-04	5.58E-03 EPA, 1999*		1.79E-01
TOTAL PAHs	6.48E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE E-1
EXPOSURE POINT CONCENTRATION (mg/kg)
BACKGROUND SOIL

Parameter	Average		95% UCL	Statistic Used
Antimony	0.953		2.19	Maximum*
Arsenic	3.438		4.477	95% Student's-t
Barium	333.1		502.3	95% Approx. Gamma
Benzo(a)anthracene	0.0116		0.0457	95% Chebyshev
Benzo(a)pyrene	0.0122		0.0431	95% Chebyshev
Benzo(b)fluoranthene	0.00941		0.0325	95% Chebyshev
Benzo(g,h,i)perylene	0.0241		0.0527	95% Chebyshev
Benzo(k)fluoranthene	0.0158		0.0595	95% Chebyshev
Cadmium	0.0311		0.11	Maximum*
Chromium	15.2		16.95	95% Student's-t
Chrysene	0.0145		0.0477	95% Chebyshev
Copper	12.12		14.41	95% Student's-t
Fluoranthene	0.0208		0.156	Maximum*
Indeno(1,2,3-cd)pyrene	0.0551		0.417	Maximum*
Lead	13.43		14.33	95% Student's-t
Lithium	21.14		24.13	95% Student's-t
Manganese	377.4		431.8	95% Student's-t
Mercury	0.0213		0.0241	95% Student's-t
Molybdenum	0.522		0.565	95% Student's-t
Phenanthrene	0.0167		0.137	Maximum*
Pyrene	0.0218		0.0728	95% Chebyshev
Zinc	247		969	Maximum*
LPAH	0.0167		0.137	
HPAH	0.18531		0.927	
TOTAL PAHs	0.20201		1.064	

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

TABLE E-2
TOXICITY REFERENCE VALUES

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
Antimony	30	EPA, 2005a	EC20 for earthworms	0.125	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.125	Sample, 1996	Chronic LOAEL in mouse with an uncertainty factor of 0.1	0.125		Mammalian TRV	0.125		Mammalian TRV	0.125		Mammalian TRV
Arsenic																		
Barium	330	EPA, 2005g	Geometric mean of the EC20 values for three test species under three separate test conditions of pH	51.8	EPA, 2005g	Geometric mean of NOAEL values for reproduction and growth	51.8	EPA, 2005g	Geometric mean of NOAEL values for reproduction and growth	51.8		Mammalian TRV	51.8		Mammalian TRV	51.8		Mammalian TRV
Benzo(a)anthracene																		
Benzo(a)pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,i)perylene																		
Benzo(k)fluoranthene																		
Cadmium	10	EPA, 1999	Chronic (4-month) NOAEL for cocoon production in earthworm (dose 10)	0.77	EPA, 2005b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.77	EPA, 2005b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.45		Avian TRV	1.47	EPA, 1999	Geometric mean of NOAEL values for reproduction and growth	1.47	EPA, 1999	Geometric mean of NOAEL values for reproduction and growth
Chromium	57	EPA, 2005c	Maximum acceptable toxicant concentration (MATC) for reproductive effects in earthworm	2.4	EPA, 2005c	Geometric mean of NOAEL values for reproduction and growth	2.4	EPA, 2005c	Geometric mean of NOAEL values for reproduction and growth	2.66		Avian TRV	2.66	EPA, 2005c	Geometric mean of the NOAEL values for reproduction and growth	2.66	EPA, 2005c	Geometric mean of the NOAEL values for reproduction and growth
Chrysene																		
Copper	80	EPA, 2007c	Geometric mean of the MATC and EC10 values for six test species under different test species	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05		Avian TRV	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Fluoranthene																		
Indeno(1,2,3-cd)pyrene																		
Lead	1700	EPA, 2005e	Geometric mean of MATC values for one test species under different pH	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.7	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63		Avian TRV	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	1.63	EPA, 2005e	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Lithium																		
Manganese																		
Mercury	2.5	EPA, 1999	Toxicity value not available -- TRV for methyl mercury was used as a surrogate	1.01	EPA, 1999	Chronic (6-months) NOAEL for reproduction in mink (dose 1.01 with uncertainty factor of 1)	1.01	EPA, 1999	Chronic (6-months) NOAEL for reproduction in mink (dose 1.01 with uncertainty factor of 1)	3.25		Avian TRV	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)
Molybdenum																		
Phenanthrene																		
Pyrene																		
Zinc	120	EPA, 2007e	Geometric mean of the MATC and EC10 values for three test species under different test species	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	75.4	EPA, 2007e	Geometric mean of NOAEL values for reproduction and growth	66.1		Avian TRV	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups
LPAH	29	EPA, 2007b		65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	65.6		Mammalian TRV	65.6		Mammalian TRV	65.6		Mammalian TRV

TOXICITY REFERENCE VALUES																		
Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
HPAH	18	EPA, 2007b		0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615	EPA, 2007b	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.615		Mammalian TRV	0.615		Mammalian TRV	0.615		Mammalian TRV
TOTAL PAHs																		

Notes:

- EPA, 2007a -- DDT
- EPA, 2007b -- PAHs
- EPA, 2007c -- Copper
- EPA, 2007d -- Nickel
- EPA, 2007e -- Zinc
- EPA, 2007f -- Selenium
- EPA, 2005a -- Antimony
- EPA, 2005b -- Cadmium
- EPA, 2005c -- Chromium
- EPA, 2005d -- Vanadium
- EPA, 2005e -- Lead
- EPA, 2005f -- Dieldrin
- EPA, 2005g -- Barium

TABLE E-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
EARTHWORM

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
Antimony	9.53E-01	2.19E+00	3.00E+01	3.18E-02	7.30E-02
Arsenic	3.44E+00	4.48E+00			
Barium	3.33E+02	5.02E+02	3.30E+02	1.01E+00	1.52E+00
Benzo(a)anthracene	1.16E-02	4.57E-02			
Benzo(a)pyrene	1.22E-02	4.31E-02			
Benzo(b)fluoranthene	9.41E-03	3.25E-02			
Benzo(g,h,i)perylene	2.41E-02	5.27E-02			
Benzo(k)fluoranthene	1.58E-02	5.95E-02			
Cadmium	3.11E-02	1.10E-01	1.00E+01	3.11E-03	1.10E-02
Chromium	1.52E+01	1.70E+01	5.70E+01	2.67E-01	2.97E-01
Chrysene	1.45E-02	4.77E-02			
Copper	1.21E+01	1.44E+01	8.00E+01	1.52E-01	1.80E-01
Fluoranthene	2.08E-02	1.56E-01			
Indeno(1,2,3-cd)pyrene	5.51E-02	4.17E-01			
Lead	1.34E+01	1.43E+01	1.70E+03	7.90E-03	8.43E-03
Lithium	2.11E+01	2.41E+01			
Manganese	3.77E+02	4.32E+02			
Mercury	2.13E-02	2.41E-02	2.50E+00	8.52E-03	9.64E-03
Molybdenum	5.22E-01	5.65E-01			
Phenanthrene	1.67E-02	1.37E-01			
Pyrene	2.18E-02	7.28E-02			
Zinc	2.47E+02	9.69E+02	1.20E+02	2.06E+00	8.08E+00
LPAH	1.67E-02	1.37E-01	2.90E+01	5.76E-04	4.72E-03
HPAH	1.85E-01	9.27E-01	1.80E+01	1.03E-02	5.15E-02
TOTAL PAHs	2.02E-01	1.06E+00			

**TABLE E-4
INTAKE CALCULATIONS FOR BACKGROUND SOIL
DEER MOUSE**

SOIL INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Sc	Soil concentration (mg/kg)	see data page				
IR	Ingestion rate of soil (kg/day)	2.13E-05		EPA, 1999 (normalized for bw)		
AF	Chemical Bioavailability in soil (unitless)	1		EPA, 1997		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.48E-02		EPA, 1999		

Chemical	Average Sc	RME Sc	Average Intake	RME Intake
Antimony	9.53E-01	2.19E+00	1.37E-03	3.15E-03
Arsenic	3.44E+00	4.48E+00	4.95E-03	6.44E-03
Barium	3.33E+02	5.02E+02	4.79E-01	7.23E-01
Benzo(a)anthracene	1.16E-02	4.57E-02	1.67E-05	6.58E-05
Benzo(a)pyrene	1.22E-02	4.31E-02	1.76E-05	6.20E-05
Benzo(b)fluoranthene	9.41E-03	3.25E-02	1.35E-05	4.68E-05
Benzo(g,h,i)perylene	2.41E-02	5.27E-02	3.47E-05	7.58E-05
Benzo(k)fluoranthene	1.58E-02	5.95E-02	2.27E-05	8.56E-05
Cadmium	3.11E-02	1.10E-01	4.48E-05	1.58E-04
Chromium	1.52E+01	1.70E+01	2.19E-02	2.44E-02
Chrysene	1.45E-02	4.77E-02	2.09E-05	6.86E-05
Copper	1.21E+01	1.44E+01	1.74E-02	2.07E-02
Fluoranthene	2.08E-02	1.56E-01	2.99E-05	2.25E-04
Indeno(1,2,3-cd)pyrene	5.51E-02	4.17E-01	7.93E-05	6.00E-04
Lead	1.34E+01	1.43E+01	1.93E-02	2.06E-02
Lithium	2.11E+01	2.41E+01	3.04E-02	3.47E-02
Manganese	3.77E+02	4.32E+02	5.43E-01	6.21E-01
Mercury	2.13E-02	2.41E-02	3.07E-05	3.47E-05
Molybdenum	5.22E-01	5.65E-01	7.51E-04	8.13E-04
Phenanthrene	1.67E-02	1.37E-01	2.40E-05	1.97E-04
Pyrene	2.18E-02	7.28E-02	3.14E-05	1.05E-04
Zinc	2.47E+02	9.69E+02	3.55E-01	1.39E+00
LPAH	1.67E-02	1.37E-01	2.40E-05	1.97E-04
HPAH	1.85E-01	9.27E-01	2.67E-04	1.33E-03
TOTAL PAHs	2.02E-01	1.06E+00	2.91E-04	1.53E-03

FOOD INGESTION						
INTAKE = ((Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs * AUF)/(BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Ca	Arthropod concentration (mg/kg)	see FoodConc page				
Cp	Plant concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	8.87E-03		EPA, 1999 (normalized for bw)		
Dfa	Dietary fraction of arthropods (unitless)	5.60E-01		EPA, 1993		
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)	4.40E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.48E-02		EPA, 1999		

Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
Antimony	2.10E-01	4.82E-01	1.91E-01	4.38E-01	1.21E-01	2.77E-01
Arsenic	3.78E-01	4.92E-01	1.24E-01	1.61E-01	1.60E-01	2.08E-01
Barium	7.33E+01	1.11E+02	5.00E+01	7.53E+01	3.78E+01	5.70E+01
Benzo(a)anthracene	3.48E-04	1.37E-03	2.34E-04	9.23E-04	1.79E-04	7.04E-04
Benzo(a)pyrene	8.54E-04	3.02E-03	1.23E-04	4.35E-04	3.19E-04	1.13E-03

TABLE E-4
INTAKE CALCULATIONS FOR BACKGROUND SOIL
DEER MOUSE

Benzo(b)fluoranthene	6.59E-04	2.28E-03	9.50E-05	3.28E-04	2.46E-04	8.50E-04
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.26E-03	4.76E-03	1.60E-04	6.01E-04	4.66E-04	1.76E-03
Cadmium	2.99E-02	1.06E-01	1.13E-02	4.00E-02	1.30E-02	4.60E-02
Chromium	1.52E-01	1.70E-01	1.14E-01	1.27E-01	8.11E-02	9.04E-02
Chrysene	5.80E-04	1.91E-03	2.71E-04	8.92E-04	2.66E-04	8.76E-04
Copper	4.85E-01	5.76E-01	4.85E+00	5.76E+00	1.44E+00	1.71E+00
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	4.41E-03	3.34E-02	2.15E-04	1.63E-03	1.54E-03	1.16E-02
Lead	4.03E-01	4.30E-01	6.04E-01	6.45E-01	2.95E-01	3.14E-01
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	8.52E-04	9.64E-04	7.99E-04	9.04E-04	4.97E-04	5.62E-04
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	1.38E+02	5.43E+02	2.96E-10	1.16E-09	4.64E+01	1.82E+02
LPAH	1.17E-03	9.59E-03	3.37E-04	2.77E-03	4.81E-04	3.95E-03
HPAH	1.30E-02	6.49E-02	3.74E-03	1.87E-02	5.34E-03	2.67E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE						
INTAKE = Soil Intake + Food Intake						
Chemical	TOTAL Average Intake		TOTAL RME Intake			
Antimony	1.22E-01		2.80E-01			
Arsenic	1.65E-01		2.14E-01			
Barium	3.83E+01		5.77E+01			
Benzo(a)anthracene	1.95E-04		7.69E-04			
Benzo(a)pyrene	3.37E-04		1.19E-03			
Benzo(b)fluoranthene	2.60E-04		8.97E-04			
Benzo(g,h,i)perylene	3.47E-05		7.58E-05			
Benzo(k)fluoranthene	4.89E-04		1.84E-03			
Cadmium	1.31E-02		4.62E-02			
Chromium	1.03E-01		1.15E-01			
Chrysene	2.87E-04		9.44E-04			
Copper	1.46E+00		1.73E+00			
Fluoranthene	2.99E-05		2.25E-04			
Indeno(1,2,3-cd)pyrene	1.62E-03		1.22E-02			
Lead	3.14E-01		3.35E-01			
Lithium	3.04E-02		3.47E-02			
Manganese	5.43E-01		6.21E-01			
Mercury	5.27E-04		5.97E-04			
Molybdenum	7.51E-04		8.13E-04			
Phenanthrene	2.40E-05		1.97E-04			
Pyrene	3.14E-05		1.05E-04			
Zinc	4.68E+01		1.84E+02			
LPAH	5.05E-04		4.15E-03			
HPAH	5.61E-03		2.81E-02			
TOTAL PAHs	6.11E-03		3.22E-02			

TABLE E-5
INTAKE CALCULATIONS FOR BACKGROUND SOIL
COYOTE

FOOD INGESTION						
$\text{INTAKE} = ((\text{Cm} * \text{IR} * \text{Dfm} * \text{AUF}) / (\text{BW})) + (\text{Cb} * \text{IR} * \text{DFb} * \text{AUF}) / (\text{BW}))$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
DFb	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Antimony	5.72E-04	1.31E-03	0.00E+00	0.00E+00	4.29E-05	9.86E-05
Arsenic	4.14E-03	5.39E-03	0.00E+00	0.00E+00	3.10E-04	4.04E-04
Barium	3.00E-02	4.53E-02	0.00E+00	0.00E+00	2.25E-03	3.39E-03
Benzo(a)anthracene	8.36E-05	3.29E-04	5.03E-05	1.98E-04	7.53E-06	2.97E-05
Benzo(a)pyrene	2.48E-04	8.77E-04	1.50E-04	5.29E-04	2.24E-05	7.90E-05
Benzo(b)fluoranthene	2.26E-04	7.82E-04	1.36E-04	4.70E-04	2.04E-05	7.04E-05
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	3.79E-04	1.43E-03	2.27E-04	8.54E-04	3.41E-05	1.28E-04
Cadmium	2.24E-06	7.93E-06	1.51E-03	5.35E-03	3.80E-05	1.34E-04
Chromium	5.03E-02	5.61E-02	0.00E+00	0.00E+00	3.77E-03	4.21E-03
Chrysene	1.20E-04	3.95E-04	7.24E-05	2.38E-04	1.08E-05	3.56E-05
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	6.85E-03	5.18E-02	4.12E-03	3.12E-02	6.17E-04	4.67E-03
Lead	2.42E-03	2.59E-03	0.00E+00	0.00E+00	1.82E-04	1.94E-04
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	6.68E-05	7.56E-05	2.33E-04	2.64E-04	1.08E-05	1.23E-05
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	1.33E-02	5.24E-02	9.92E-01	3.89E+00	2.58E-02	1.01E-01
LPAH	8.89E-04	7.29E-03	5.36E-04	4.40E-03	8.01E-05	6.57E-04
HPAH	9.86E-03	4.93E-02	5.95E-03	2.98E-02	8.88E-04	4.44E-03
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

**TABLE E-6
INTAKE CALCULATIONS FOR BACKGROUND SOIL
RAT SNAKE**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Sc	Soil concentration (mg/kg)	see data page						
IR	Ingestion rate of soil (kg/day)	1.45E-04		EPA, 1993 *				
AF	Chemical Bioavailability in soil (unitless)	1		EPA, 1997				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	1.39E-01		EPA, 1993				
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
Antimony	9.53E-01	2.19E+00	9.91E-04	2.28E-03				
Arsenic	3.44E+00	4.48E+00	3.58E-03	4.66E-03				
Barium	3.33E+02	5.02E+02	3.46E-01	5.22E-01				
Benzo(a)anthracene	1.16E-02	4.57E-02	1.21E-05	4.75E-05				
Benzo(a)pyrene	1.22E-02	4.31E-02	1.27E-05	4.48E-05				
Benzo(b)fluoranthene	9.41E-03	3.25E-02	9.79E-06	3.38E-05				
Benzo(g,h,i)perylene	2.41E-02	5.27E-02	2.51E-05	5.48E-05				
Benzo(k)fluoranthene	1.58E-02	5.95E-02	1.64E-05	6.19E-05				
Cadmium	3.11E-02	1.10E-01	3.23E-05	1.14E-04				
Chromium	1.52E+01	1.70E+01	1.58E-02	1.76E-02				
Chrysene	1.45E-02	4.77E-02	1.51E-05	4.96E-05				
Copper	1.21E+01	1.44E+01	1.26E-02	1.50E-02				
Fluoranthene	2.08E-02	1.56E-01	2.16E-05	1.62E-04				
Indeno(1,2,3-cd)pyrene	5.51E-02	4.17E-01	5.73E-05	4.34E-04				
Lead	1.34E+01	1.43E+01	1.40E-02	1.49E-02				
Lithium	2.11E+01	2.41E+01	2.20E-02	2.51E-02				
Manganese	3.77E+02	4.32E+02	3.92E-01	4.49E-01				
Mercury	2.13E-02	2.41E-02	2.22E-05	2.51E-05				
Molybdenum	5.22E-01	5.65E-01	5.43E-04	5.88E-04				
Phenanthrene	1.67E-02	1.37E-01	1.74E-05	1.42E-04				
Pyrene	2.18E-02	7.28E-02	2.27E-05	7.57E-05				
Zinc	2.47E+02	9.69E+02	2.57E-01	1.01E+00				
LPAH	1.67E-02	1.37E-01	1.74E-05	1.42E-04				
HPAH	1.85E-01	9.27E-01	1.93E-04	9.64E-04				
TOTAL PAHs	2.02E-01	1.06E+00	2.10E-04	1.11E-03				
FOOD INGESTION								
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))								
Parameter	Definition	Value		Reference				
Intake	Intake of chemical (mg/kg-day)	calculated						
Cb	Bird concentration (mg/kg)	see FoodConc page						
Ca	Arthropod concentration (mg/kg)	see FoodConc page						
Cm	Mammal concentration (mg/kg)	see FoodConc page						
IR	Ingestion rate of food (kg/day)	2.78E-03		EPA, 1993 (normalized for bw)				
Dfb	Dietary fraction of birds (unitless)	1.80E-01		EPA, 1993				
Dfa	Dietary fraction of arthropods (unitless)	2.00E-01		EPA, 1993				
DFm	Dietary fraction of small mammals (unitless)	6.20E-01		EPA, 1993				
AUF	Area Use Factor	1		EPA, 1997				
BW	Body weight (kg)	1.39E-01		EPA, 1993				
Chemical	Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake
Antimony	0.00E+00	0.00E+00	2.10E-01	4.82E-01	5.72E-04	1.31E-03	8.46E-04	1.94E-03
Arsenic	0.00E+00	0.00E+00	3.78E-01	4.92E-01	4.14E-03	5.39E-03	1.56E-03	2.04E-03
Barium	0.00E+00	0.00E+00	7.33E+01	1.11E+02	3.00E-02	4.53E-02	2.94E-01	4.43E-01
Benzo(a)anthracene	5.03E-05	1.98E-04	3.48E-04	1.37E-03	8.36E-05	3.29E-04	2.61E-06	1.03E-05
Benzo(a)pyrene	1.50E-04	5.29E-04	8.54E-04	3.02E-03	2.48E-04	8.77E-04	7.03E-06	2.48E-05
Benzo(b)fluoranthene	1.36E-04	4.70E-04	6.59E-04	2.28E-03	2.26E-04	7.82E-04	5.93E-06	2.05E-05
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	2.27E-04	8.54E-04	1.26E-03	4.76E-03	3.79E-04	1.43E-03	1.06E-05	3.98E-05
Cadmium	1.51E-03	5.35E-03	2.99E-02	1.06E-01	2.24E-06	7.93E-06	1.25E-04	4.42E-04
Chromium	0.00E+00	0.00E+00	1.52E-01	1.70E-01	5.03E-02	5.61E-02	1.23E-03	1.37E-03
Chrysene	7.24E-05	2.38E-04	5.80E-04	1.91E-03	1.20E-04	3.95E-04	4.07E-06	1.34E-05
Copper	0.00E+00	0.00E+00	4.85E-01	5.76E-01	0.00E+00	0.00E+00	1.94E-03	2.31E-03

**TABLE E-6
INTAKE CALCULATIONS FOR BACKGROUND SOIL
RAT SNAKE**

Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	4.12E-03	3.12E-02	4.41E-03	3.34E-02	6.85E-03	5.18E-02	1.17E-04	8.88E-04
Lead	0.00E+00	0.00E+00	4.03E-01	4.30E-01	2.42E-03	2.59E-03	1.64E-03	1.75E-03
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	2.33E-04	2.64E-04	8.52E-04	9.64E-04	6.68E-05	7.56E-05	5.08E-06	5.74E-06
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	9.92E-01	3.89E+00	1.38E+02	5.43E+02	1.33E-02	5.24E-02	5.57E-01	2.19E+00
LPAH	5.36E-04	4.40E-03	1.17E-03	9.59E-03	8.89E-04	7.29E-03	1.76E-05	1.45E-04
HPAH	5.95E-03	2.98E-02	1.30E-02	6.49E-02	9.86E-03	4.93E-02	1.96E-04	9.79E-04
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical	TOTAL Average Intake						TOTAL RME Intake	
Antimony	1.84E-03						4.22E-03	
Arsenic	5.14E-03						6.69E-03	
Barium	6.40E-01						9.65E-01	
Benzo(a)anthracene	1.47E-05						5.78E-05	
Benzo(a)pyrene	1.97E-05						6.97E-05	
Benzo(b)fluoranthene	1.57E-05						5.43E-05	
Benzo(g,h,i)perylene	2.51E-05						5.48E-05	
Benzo(k)fluoranthene	2.70E-05						1.02E-04	
Cadmium	1.57E-04						5.56E-04	
Chromium	1.70E-02						1.90E-02	
Chrysene	1.92E-05						6.30E-05	
Copper	1.45E-02						1.73E-02	
Fluoranthene	2.16E-05						1.62E-04	
Indeno(1,2,3-cd)pyrene	1.75E-04						1.32E-03	
Lead	1.56E-02						1.67E-02	
Lithium	2.20E-02						2.51E-02	
Manganese	3.92E-01						4.49E-01	
Mercury	2.72E-05						3.08E-05	
Molybdenum	5.43E-04						5.88E-04	
Phenanthrene	1.74E-05						1.42E-04	
Pyrene	2.27E-05						7.57E-05	
Zinc	8.14E-01						3.19E+00	
LPAH	3.50E-05						2.87E-04	
HPAH	3.88E-04						1.94E-03	
TOTAL PAHs	4.23E-04						2.23E-03	

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

**TABLE E-7
INTAKE CALCULATIONS FOR BACKGROUND SOIL
AMERICAN ROBIN**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition		Value		Reference			
Intake	Intake of chemical (mg/kg-day)		calculated					
Sc	Soil concentration (mg/kg)		see data page					
IR	Ingestion rate of soil (kg/day)		1.14E-03		EPA, 1999 (normalized for bw)			
AF	Chemical Bioavailability in soil (unitless)		1		EPA, 1997			
AUF	Area Use Factor		1		EPA, 1997			
BW	Body weight (kg)		8.00E-02		EPA, 1999			
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
Antimony	9.53E-01	2.19E+00	1.36E-02	3.12E-02				
Arsenic	3.44E+00	4.48E+00	4.90E-02	6.38E-02				
Barium	3.33E+02	5.02E+02	4.75E+00	7.16E+00				
Benzo(a)anthracene	1.16E-02	4.57E-02	1.65E-04	6.51E-04				
Benzo(a)pyrene	1.22E-02	4.31E-02	1.74E-04	6.14E-04				
Benzo(b)fluoranthene	9.41E-03	3.25E-02	1.34E-04	4.63E-04				
Benzo(g,h,i)perylene	2.41E-02	5.27E-02	3.43E-04	7.51E-04				
Benzo(k)fluoranthene	1.58E-02	5.95E-02	2.25E-04	8.48E-04				
Cadmium	3.11E-02	1.10E-01	4.43E-04	1.57E-03				
Chromium	1.52E+01	1.70E+01	2.17E-01	2.42E-01				
Chrysene	1.45E-02	4.77E-02	2.07E-04	6.80E-04				
Copper	1.21E+01	1.44E+01	1.73E-01	2.05E-01				
Fluoranthene	2.08E-02	1.56E-01	2.96E-04	2.22E-03				
Indeno(1,2,3-cd)pyrene	5.51E-02	4.17E-01	7.85E-04	5.94E-03				
Lead	1.34E+01	1.43E+01	1.91E-01	2.04E-01				
Lithium	2.11E+01	2.41E+01	3.01E-01	3.44E-01				
Manganese	3.77E+02	4.32E+02	5.38E+00	6.15E+00				
Mercury	2.13E-02	2.41E-02	3.04E-04	3.43E-04				
Molybdenum	5.22E-01	5.65E-01	7.44E-03	8.05E-03				
Phenanthrene	1.67E-02	1.37E-01	2.38E-04	1.95E-03				
Pyrene	2.18E-02	7.28E-02	3.11E-04	1.04E-03				
Zinc	2.47E+02	9.69E+02	3.52E+00	1.38E+01				
LPAH	1.67E-02	1.37E-01	2.38E-04	1.95E-03				
HPAH	1.85E-01	9.27E-01	2.64E-03	1.32E-02				
TOTAL PAHs	2.02E-01	1.06E+00	2.88E-03	1.52E-02				
FOOD INGESTION								
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))								
Parameter	Definition		Value		Reference			
Intake	Intake of chemical (mg/kg-day)		calculated					
Ce	Earthworm concentration (mg/kg)		see FoodConc page					
Ca	Arthropod concentration (mg/kg)		see FoodConc page					
Cp	Plant concentration (mg/kg)		see FoodConc page					
IR	Ingestion rate of food (kg/day)		3.52E-02		EPA, 1999 (normalized for bw)			
Dfe	Dietary fraction of earthworms (unitless)		4.60E-01		EPA, 1993			
Dfa	Dietary fraction of arthropods (unitless)		4.60E-01		EPA, 1993			
DFs	Dietary fraction of plants, seeds and other vegetation (unitless)		8.00E-02		EPA, 1993			
AUF	Area Use Factor		1		EPA, 1997			
BW	Body weight (kg)		8.00E-02		EPA, 1999			
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
Antimony	2.10E-01	4.82E-01	2.10E-01	4.82E-01	1.91E-01	4.38E-01	9.16E-02	2.10E-01
Arsenic	3.78E-01	4.92E-01	3.78E-01	4.92E-01	1.24E-01	1.61E-01	1.57E-01	2.05E-01
Barium	7.33E+01	1.11E+02	7.33E+01	1.11E+02	5.00E+01	7.53E+01	3.14E+01	4.74E+01
Benzo(a)anthracene	3.48E-04	1.37E-03	3.48E-04	1.37E-03	2.34E-04	9.23E-04	1.49E-04	5.87E-04
Benzo(a)pyrene	8.54E-04	3.02E-03	8.54E-04	3.02E-03	1.23E-04	4.35E-04	3.50E-04	1.24E-03
Benzo(b)fluoranthene	6.59E-04	2.28E-03	6.59E-04	2.28E-03	9.50E-05	3.28E-04	2.70E-04	9.32E-04
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	1.26E-03	4.76E-03	1.26E-03	4.76E-03	1.60E-04	6.01E-04	5.17E-04	1.95E-03
Cadmium	2.99E-02	1.06E-01	2.99E-02	1.06E-01	1.13E-02	4.00E-02	1.25E-02	4.42E-02
Chromium	1.52E-01	1.70E-01	1.52E-01	1.70E-01	1.14E-01	1.27E-01	6.55E-02	7.31E-02
Chrysene	5.80E-04	1.91E-03	5.80E-04	1.91E-03	2.71E-04	8.92E-04	2.44E-04	8.04E-04
Copper	4.85E-01	5.76E-01	4.85E-01	5.76E-01	4.85E+00	5.76E+00	3.67E-01	4.36E-01

**TABLE E-7
INTAKE CALCULATIONS FOR BACKGROUND SOIL
AMERICAN ROBIN**

Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	4.41E-03	3.34E-02	4.41E-03	3.34E-02	2.15E-04	1.63E-03	1.79E-03	1.36E-02
Lead	4.03E-01	4.30E-01	4.03E-01	4.30E-01	6.04E-01	6.45E-01	1.84E-01	1.97E-01
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	8.52E-04	9.64E-04	8.52E-04	9.64E-04	7.99E-04	9.04E-04	3.73E-04	4.22E-04
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	1.38E+02	5.43E+02	1.38E+02	5.43E+02	2.96E-10	1.16E-09	5.60E+01	2.20E+02
LPAH	1.17E-03	9.59E-03	1.17E-03	9.59E-03	3.37E-04	2.77E-03	4.85E-04	3.98E-03
HPAH	1.30E-02	6.49E-02	1.30E-02	6.49E-02	3.74E-03	1.87E-02	5.38E-03	2.69E-02
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
Chemical	TOTAL Average Intake						TOTAL RME Intake	
Antimony	1.05E-01						2.42E-01	
Arsenic	2.06E-01						2.69E-01	
Barium	3.62E+01						5.45E+01	
Benzo(a)anthracene	3.14E-04						1.24E-03	
Benzo(a)pyrene	5.24E-04						1.85E-03	
Benzo(b)fluoranthene	4.04E-04						1.40E-03	
Benzo(g,h,i)perylene	3.43E-04						7.51E-04	
Benzo(k)fluoranthene	7.42E-04						2.80E-03	
Cadmium	1.29E-02						4.57E-02	
Chromium	2.82E-01						3.15E-01	
Chrysene	4.51E-04						1.48E-03	
Copper	5.40E-01						6.42E-01	
Fluoranthene	2.96E-04						2.22E-03	
Indeno(1,2,3-cd)pyrene	2.58E-03						1.95E-02	
Lead	3.76E-01						4.01E-01	
Lithium	3.01E-01						3.44E-01	
Manganese	5.38E+00						6.15E+00	
Mercury	6.77E-04						7.65E-04	
Molybdenum	7.44E-03						8.05E-03	
Phenanthrene	2.38E-04						1.95E-03	
Pyrene	3.11E-04						1.04E-03	
Zinc	5.95E+01						2.33E+02	
LPAH	7.23E-04						5.93E-03	
HPAH	8.02E-03						4.01E-02	
TOTAL PAHs	8.75E-03						4.61E-02	

TABLE E-8
INTAKE CALCULATIONS FOR BACKGROUND SOIL
RED-TAILED HAWK

FOOD INGESTION						
$\text{INTAKE} = ((\text{Cm} * \text{IR} * \text{Dfm} * \text{AUF}) / (\text{BW})) + (\text{Cb} * \text{IR} * \text{DFb} * \text{AUF}) / (\text{BW}))$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01		EPA, 1999 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01		EPA, 1993		
DFb	Dietary fraction of birds (unitless)	2.15E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	9.60E-01		EPA, 1999		

Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Antimony	5.72E-04	1.31E-03	0.00E+00	0.00E+00	8.31E-05	1.91E-04
Arsenic	4.14E-03	5.39E-03	0.00E+00	0.00E+00	6.01E-04	7.82E-04
Barium	3.00E-02	4.53E-02	0.00E+00	0.00E+00	4.36E-03	6.57E-03
Benzo(a)anthracene	8.36E-05	3.29E-04	5.03E-05	1.98E-04	1.41E-05	5.57E-05
Benzo(a)pyrene	2.48E-04	8.77E-04	1.50E-04	5.29E-04	4.20E-05	1.48E-04
Benzo(b)fluoranthene	2.26E-04	7.82E-04	1.36E-04	4.70E-04	3.83E-05	1.32E-04
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	3.79E-04	1.43E-03	2.27E-04	8.54E-04	6.40E-05	2.41E-04
Cadmium	2.24E-06	7.93E-06	1.51E-03	5.35E-03	6.05E-05	2.14E-04
Chromium	5.03E-02	5.61E-02	0.00E+00	0.00E+00	7.30E-03	8.14E-03
Chrysene	1.20E-04	3.95E-04	7.24E-05	2.38E-04	2.03E-05	6.69E-05
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	6.85E-03	5.18E-02	4.12E-03	3.12E-02	1.16E-03	8.77E-03
Lead	2.42E-03	2.59E-03	0.00E+00	0.00E+00	3.52E-04	3.75E-04
Lithium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	6.68E-05	7.56E-05	2.33E-04	2.64E-04	1.90E-05	2.15E-05
Molybdenum	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	1.33E-02	5.24E-02	9.92E-01	3.89E+00	4.14E-02	1.62E-01
LPAH	8.89E-04	7.29E-03	5.36E-04	4.40E-03	1.50E-04	1.23E-03
HPAH	9.86E-03	4.93E-02	5.95E-03	2.98E-02	1.67E-03	8.35E-03
TOTAL PAHs	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE E-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
DEER MOUSE

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
Antimony	1.22E-01	2.80E-01	1.25E-01	9.76E-01	2.24E+00
Arsenic	1.65E-01	2.14E-01			
Barium	3.83E+01	5.77E+01	5.18E+01	7.38E-01	1.11E+00
Benzo(a)anthracene	1.95E-04	7.69E-04			
Benzo(a)pyrene	3.37E-04	1.19E-03			
Benzo(b)fluoranthene	2.60E-04	8.97E-04			
Benzo(g,h,i)perylene	3.47E-05	7.58E-05			
Benzo(k)fluoranthene	4.89E-04	1.84E-03			
Cadmium	1.31E-02	4.62E-02	7.70E-01	1.69E-02	5.99E-02
Chromium	1.03E-01	1.15E-01	2.40E+00	4.29E-02	4.78E-02
Chrysene	2.87E-04	9.44E-04			
Copper	1.46E+00	1.73E+00	5.60E+00	2.60E-01	3.10E-01
Fluoranthene	2.99E-05	2.25E-04			
Indeno(1,2,3-cd)pyrene	1.62E-03	1.22E-02			
Lead	3.14E-01	3.35E-01	4.70E+00	6.68E-02	7.13E-02
Lithium	3.04E-02	3.47E-02			
Manganese	5.43E-01	6.21E-01			
Mercury	5.27E-04	5.97E-04	1.01E+00	5.22E-04	5.91E-04
Molybdenum	7.51E-04	8.13E-04			
Phenanthrene	2.40E-05	1.97E-04			
Pyrene	3.14E-05	1.05E-04			
Zinc	4.68E+01	1.84E+02	7.54E+01	6.20E-01	2.43E+00
LPAH	5.05E-04	4.15E-03	6.56E+01	7.70E-06	6.32E-05
HPAH	5.61E-03	2.81E-02	6.15E-01	9.12E-03	4.56E-02
TOTAL PAHs	6.11E-03	3.22E-02			

TABLE E-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
COYOTE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
Antimony	4.29E-05	9.86E-05	1.25E-01	3.43E-04	7.89E-04
Arsenic	3.10E-04	4.04E-04			
Barium	2.25E-03	3.39E-03	5.18E+01	4.35E-05	6.55E-05
Benzo(a)anthracene	7.53E-06	2.97E-05			
Benzo(a)pyrene	2.24E-05	7.90E-05			
Benzo(b)fluoranthene	2.04E-05	7.04E-05			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	3.41E-05	1.28E-04			
Cadmium	3.80E-05	1.34E-04	7.70E-01	4.93E-05	1.74E-04
Chromium	3.77E-03	4.21E-03	2.40E+00	1.57E-03	1.75E-03
Chrysene	1.08E-05	3.56E-05			
Copper	0.00E+00	0.00E+00	5.60E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	0.00E+00			
Indeno(1,2,3-cd)pyrene	6.17E-04	4.67E-03			
Lead	1.82E-04	1.94E-04	4.70E+00	3.87E-05	4.13E-05
Lithium	0.00E+00	0.00E+00			
Manganese	0.00E+00	0.00E+00			
Mercury	1.08E-05	1.23E-05	1.01E+00	1.07E-05	1.21E-05
Molybdenum	0.00E+00	0.00E+00			
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Zinc	2.58E-02	1.01E-01	7.54E+01	3.42E-04	1.34E-03
LPAH	8.01E-05	6.57E-04	6.56E+01	1.22E-06	1.00E-05
HPAH	8.88E-04	4.44E-03	6.15E-01	1.44E-03	7.23E-03
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE E-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL SOUTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
Antimony	1.84E-03	4.22E-03	1.25E-01	1.47E-02	3.38E-02
Arsenic	5.14E-03	6.69E-03			
Barium	6.40E-01	9.65E-01	5.18E+01	1.24E-02	1.86E-02
Benzo(a)anthracene	1.47E-05	5.78E-05			
Benzo(a)pyrene	1.97E-05	6.97E-05			
Benzo(b)fluoranthene	1.57E-05	5.43E-05			
Benzo(g,h,i)perylene	2.51E-05	5.48E-05			
Benzo(k)fluoranthene	2.70E-05	1.02E-04			
Cadmium	1.57E-04	5.56E-04	1.45E+00	1.08E-04	3.84E-04
Chromium	1.70E-02	1.90E-02	2.66E+00	6.41E-03	7.14E-03
Chrysene	1.92E-05	6.30E-05			
Copper	1.45E-02	1.73E-02	4.05E+00	3.59E-03	4.27E-03
Fluoranthene	2.16E-05	1.62E-04			
Indeno(1,2,3-cd)pyrene	1.75E-04	1.32E-03			
Lead	1.56E-02	1.67E-02	1.63E+00	9.58E-03	1.02E-02
Lithium	2.20E-02	2.51E-02			
Manganese	3.92E-01	4.49E-01			
Mercury	2.72E-05	3.08E-05	3.25E+00	8.38E-06	9.48E-06
Molybdenum	5.43E-04	5.88E-04			
Phenanthrene	1.74E-05	1.42E-04			
Pyrene	2.27E-05	7.57E-05			
Zinc	8.14E-01	3.19E+00	6.61E+01	1.23E-02	4.83E-02
LPAH	3.50E-05	2.87E-04	6.56E+01	5.33E-07	4.38E-06
HPAH	3.88E-04	1.94E-03	6.15E-01	6.31E-04	3.16E-03
TOTAL PAHs	4.23E-04	2.23E-03			

TABLE E-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
AMERICAN ROBIN

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
Antimony	1.05E-01	2.42E-01	1.25E-01	8.41E-01	1.93E+00
Arsenic	2.06E-01	2.69E-01			
Barium	3.62E+01	5.45E+01	5.18E+01	6.98E-01	1.05E+00
Benzo(a)anthracene	3.14E-04	1.24E-03			
Benzo(a)pyrene	5.24E-04	1.85E-03			
Benzo(b)fluoranthene	4.04E-04	1.40E-03			
Benzo(g,h,i)perylene	3.43E-04	7.51E-04			
Benzo(k)fluoranthene	7.42E-04	2.80E-03			
Cadmium	1.29E-02	4.57E-02	1.47E+00	8.79E-03	3.11E-02
Chromium	2.82E-01	3.15E-01	2.66E+00	1.06E-01	1.18E-01
Chrysene	4.51E-04	1.48E-03			
Copper	5.40E-01	6.42E-01	4.05E+00	1.33E-01	1.58E-01
Fluoranthene	2.96E-04	2.22E-03			
Indeno(1,2,3-cd)pyrene	2.58E-03	1.95E-02			
Lead	3.76E-01	4.01E-01	1.63E+00	2.31E-01	2.46E-01
Lithium	3.01E-01	3.44E-01			
Manganese	5.38E+00	6.15E+00			
Mercury	6.77E-04	7.65E-04	3.25E+00	2.08E-04	2.36E-04
Molybdenum	7.44E-03	8.05E-03			
Phenanthrene	2.38E-04	1.95E-03			
Pyrene	3.11E-04	1.04E-03			
Zinc	5.95E+01	2.33E+02	6.61E+01	9.00E-01	3.53E+00
LPAH	7.23E-04	5.93E-03	6.56E+01	1.10E-05	9.04E-05
HPAH	8.02E-03	4.01E-02	6.15E-01	1.30E-02	6.53E-02
TOTAL PAHs	8.75E-03	4.61E-02			

TABLE E-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
Antimony	8.31E-05	1.91E-04	1.25E-01	6.65E-04	1.53E-03
Arsenic	6.01E-04	7.82E-04			
Barium	4.36E-03	6.57E-03	5.18E+01	8.42E-05	1.27E-04
Benzo(a)anthracene	1.41E-05	5.57E-05			
Benzo(a)pyrene	4.20E-05	1.48E-04			
Benzo(b)fluoranthene	3.83E-05	1.32E-04			
Benzo(g,h,i)perylene	0.00E+00	0.00E+00			
Benzo(k)fluoranthene	6.40E-05	2.41E-04			
Cadmium	6.05E-05	2.14E-04	1.47E+00	4.11E-05	1.45E-04
Chromium	7.30E-03	8.14E-03	2.66E+00	2.75E-03	3.06E-03
Chrysene	2.03E-05	6.69E-05			
Copper	0.00E+00	0.00E+00	4.05E+00	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	0.00E+00			
Indeno(1,2,3-cd)pyrene	1.16E-03	8.77E-03			
Lead	3.52E-04	3.75E-04	1.63E+00	2.16E-04	2.30E-04
Lithium	0.00E+00	0.00E+00			
Manganese	0.00E+00	0.00E+00			
Mercury	1.90E-05	2.15E-05	3.25E+00	5.84E-06	6.61E-06
Molybdenum	0.00E+00	0.00E+00			
Phenanthrene	0.00E+00	0.00E+00			
Pyrene	0.00E+00	0.00E+00			
Zinc	4.14E-02	1.62E-01	6.61E+01	6.26E-04	2.46E-03
LPAH	1.50E-04	1.23E-03	6.56E+01	2.29E-06	1.88E-05
HPAH	1.67E-03	8.35E-03	6.15E-01	2.71E-03	1.36E-02
TOTAL PAHs	0.00E+00	0.00E+00			

TABLE E-14
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood = Chemical Concentration in food (mg/kg dry)																								
Csoil = Chemical Concentration in soil (mg/kg dry)																								
BCF = Bioconcentration Factor (unitless)																								
BAF = Bioaccumulation Factor (unitless)																								
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Antimony	9.53E-01	2.20E-01	2.10E-01 EPA, 1999		2.20E-01	2.10E-01 EPA, 1999		2.00E-01	1.91E-01 EPA, 1999		5.99E-04	5.71E-04 EPA, 1999		1.44E-06	1.37E-06 EPA, 1999		5.72E-04		0.00E+00			0.00E+00		0.00E+00
Arsenic	3.44E+00	1.10E-01	3.78E-01 EPA, 1999		1.10E-01	3.78E-01 EPA, 1999		3.60E-02	1.24E-01 EPA, 1999		1.20E-03	4.13E-03 EPA, 1999		2.88E-06	9.90E-06 EPA, 1999		4.14E-03		0.00E+00			0.00E+00		0.00E+00
Barium	3.33E+02	2.20E-01	7.33E+01 EPA, 1999		2.20E-01	7.33E+01 EPA, 1999		1.50E-01	5.00E+01 EPA, 1999		8.99E-05	2.99E-02 EPA, 1999		2.16E-07	7.19E-05 EPA, 1999		3.00E-02		0.00E+00			0.00E+00		0.00E+00
Benzo(a)anthracene	1.16E-02	3.00E-02	3.48E-04 EPA, 1999		3.00E-02	3.48E-04 EPA, 1999		2.02E-02	2.34E-04 EPA, 1999		7.19E-03	8.34E-05 EPA, 1999		1.73E-05	2.01E-07 EPA, 1999		8.36E-05	4.20E-03	4.87E-05 EPA, 1999		1.35E-04	1.57E-06 EPA, 1999		5.03E-05
Benzo(a)pyrene	1.22E-02	7.00E-02	8.54E-04 EPA, 1999		7.00E-02	8.54E-04 EPA, 1999		1.01E-02	1.23E-04 EPA, 1999		2.03E-02	2.48E-04 EPA, 1999		4.86E-05	5.93E-07 EPA, 1999		2.48E-04	1.19E-02	1.45E-04 EPA, 1999		3.81E-04	4.65E-06 EPA, 1999		1.50E-04
Benzo(b)fluoranthene	9.41E-03	7.00E-02	6.59E-04 EPA, 1999		7.00E-02	6.59E-04 EPA, 1999		1.01E-02	9.50E-05 EPA, 1999		2.40E-02	2.26E-04 EPA, 1999		5.75E-05	5.41E-07 EPA, 1999		2.26E-04	1.40E-02	1.32E-04 EPA, 1999		4.50E-04	4.23E-06 EPA, 1999		1.36E-04
Benzo(g,h,i)perylene	2.41E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Benzo(k)fluoranthene	1.58E-02	8.00E-02	1.26E-03 EPA, 1999		8.00E-02	1.26E-03 EPA, 1999		1.01E-02	1.60E-04 EPA, 1999		2.39E-02	3.78E-04 EPA, 1999		5.73E-05	9.05E-07 EPA, 1999		3.79E-04	1.39E-02	2.20E-04 EPA, 1999		4.48E-04	7.08E-06 EPA, 1999		2.27E-04
Cadmium	3.11E-02	9.60E-01	2.99E-02 EPA, 1999		9.60E-01	2.99E-02 EPA, 1999		3.64E-01	1.13E-02 EPA, 1999		7.19E-05	2.24E-06 EPA, 1999		1.73E-07	5.38E-09 EPA, 1999		2.24E-06	4.71E-02	1.46E-03 EPA, 1999		1.51E-03	4.70E-05 EPA, 1999		1.51E-03
Chromium	1.52E+01	1.00E-02	1.52E-01 EPA, 1999		1.00E-02	1.52E-01 EPA, 1999		7.50E-03	1.14E-01 EPA, 1999		3.30E-03	5.02E-02 VI - EPA, 1999		7.91E-06	1.20E-04 VI - EPA, 1999		5.03E-02		0.00E+00			0.00E+00		0.00E+00
Chrysene	1.45E-02	4.00E-02	5.80E-04 EPA, 1999		4.00E-02	5.80E-04 EPA, 1999		1.87E-02	2.71E-04 EPA, 1999		8.27E-03	1.20E-04 EPA, 1999		1.99E-05	2.89E-07 EPA, 1999		1.20E-04	4.84E-03	7.02E-05 EPA, 1999		1.55E-04	2.25E-06 EPA, 1999		7.24E-05
Copper	1.21E+01	4.00E-02	4.85E-01 EPA, 1999		4.00E-02	4.85E-01 EPA, 1999		4.00E-01	4.85E+00 EPA, 1999			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluoranthene	2.08E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Indeno(1,2,3-cd)pyrene	5.51E-02	8.00E-02	4.41E-03 EPA, 1999		8.00E-02	4.41E-03 EPA, 1999		3.90E-03	2.15E-04 EPA, 1999		1.24E-01	6.83E-03 EPA, 1999		2.98E-04	1.64E-05 EPA, 1999		6.85E-03	7.24E-02	3.99E-03 EPA, 1999		2.32E-03	1.28E-04 EPA, 1999		4.12E-03
Lead	1.34E+01	3.00E-02	4.03E-01 EPA, 1999		3.00E-02	4.03E-01 EPA, 1999		4.50E-02	6.04E-01 EPA, 1999		1.80E-04	2.42E-03 EPA, 1999		4.32E-07	5.80E-06 EPA, 1999		2.42E-03		0.00E+00			0.00E+00		0.00E+00
Lithium	2.11E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Manganese	3.77E+02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Mercury	2.13E-02	4.00E-02	8.52E-04 EPA, 1999		4.00E-02	8.52E-04 EPA, 1999		3.75E-02	7.99E-04 EPA, 1999		3.13E-03	6.67E-05 EPA, 1999		7.52E-06	1.60E-07 EPA, 1999		6.68E-05	1.06E-02	2.26E-04 EPA, 1999		3.42E-04	7.28E-06 EPA, 1999		2.33E-04
Molybdenum	5.22E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Phenanthrene	1.67E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Pyrene	2.18E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Zinc	2.47E+02	5.60E-01	1.38E+02 EPA, 1999		5.60E-01	1.38E+02 EPA, 1999		1.20E-12	2.96E-10 EPA, 1999		5.39E-05	1.33E-02 EPA, 1999		1.29E-07	3.19E-05 EPA, 1999		1.33E-02	3.89E-03	9.61E-01 EPA, 1999		1.25E-04	3.09E-02 EPA, 1999		9.92E-01
LPAH	1.67E-02	7.00E-02	1.17E-03 EPA, 1999*		7.00E-02	1.17E-03 EPA, 1999*		2.02E-02	3.37E-04 EPA, 1999*		5.31E-02	8.87E-04 EPA, 1999*		1.27E-04	2.12E-06 EPA, 1999*		8.89E-04	3.11E-02	5.19E-04 EPA, 1999*		9.98E-04	1.67E-05 EPA, 1999*		5.36E-04
HPAH	1.85E-01	7.00E-02	1.30E-02 EPA, 1999*		7.00E-02	1.30E-02 EPA, 1999*		2.02E-02	3.74E-03 EPA, 1999*		5.31E-02	9.84E-03 EPA, 1999*		1.27E-04	2.35E-05 EPA, 1999*		9.86E-03	3.11E-02	5.76E-03 EPA, 1999*		9.98E-04	1.85E-04 EPA, 1999*		5.95E-03
TOTAL PAHs	2.02E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE E-15
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Food = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Antimony	2.19E+00	2.20E-01	4.82E-01 EPA, 1999		2.20E-01	4.82E-01 EPA, 1999		2.00E-01	4.38E-01 EPA, 1999		5.99E-04	1.31E-03 EPA, 1999		1.44E-06	3.15E-06 EPA, 1999		1.31E-03		0.00E+00			0.00E+00		0.00E+00
Arsenic	4.48E+00	1.10E-01	4.92E-01 EPA, 1999		1.10E-01	4.92E-01 EPA, 1999		3.60E-02	1.61E-01 EPA, 1999		1.20E-03	5.37E-03 EPA, 1999		2.88E-06	1.29E-05 EPA, 1999		5.39E-03		0.00E+00			0.00E+00		0.00E+00
Barium	5.02E+02	2.20E-01	1.11E+02 EPA, 1999		2.20E-01	1.11E+02 EPA, 1999		1.50E-01	7.53E+01 EPA, 1999		8.99E-05	4.52E-02 EPA, 1999		2.16E-07	1.08E-04 EPA, 1999		4.53E-02		0.00E+00			0.00E+00		0.00E+00
Benzo(a)anthracene	4.57E-02	3.00E-02	1.37E-03 EPA, 1999		3.00E-02	1.37E-03 EPA, 1999		2.02E-02	9.23E-04 EPA, 1999		7.19E-03	3.29E-04 EPA, 1999		1.73E-05	7.91E-07 EPA, 1999		3.29E-04	4.20E-03	1.92E-04 EPA, 1999		1.35E-04	6.17E-06 EPA, 1999		1.98E-04
Benzo(a)pyrene	4.31E-02	7.00E-02	3.02E-03 EPA, 1999		7.00E-02	3.02E-03 EPA, 1999		1.01E-02	4.35E-04 EPA, 1999		2.03E-02	8.75E-04 EPA, 1999		4.86E-05	2.09E-06 EPA, 1999		8.77E-04	1.19E-02	5.13E-04 EPA, 1999		3.81E-04	1.64E-05 EPA, 1999		5.29E-04
Benzo(b)fluoranthene	3.25E-02	7.00E-02	2.28E-03 EPA, 1999		7.00E-02	2.28E-03 EPA, 1999		1.01E-02	3.28E-04 EPA, 1999		2.40E-02	7.80E-04 EPA, 1999		5.75E-05	1.87E-06 EPA, 1999		7.82E-04	1.40E-02	4.55E-04 EPA, 1999		4.50E-04	1.46E-05 EPA, 1999		4.70E-04
Benzo(g,h,i)perylene	5.27E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Benzo(k)fluoranthene	5.95E-02	8.00E-02	4.76E-03 EPA, 1999		8.00E-02	4.76E-03 EPA, 1999		1.01E-02	6.01E-04 EPA, 1999		2.39E-02	1.42E-03 EPA, 1999		5.73E-05	3.41E-06 EPA, 1999		1.43E-03	1.39E-02	8.27E-05 EPA, 1999		4.48E-04	2.67E-05 EPA, 1999		8.54E-04
Cadmium	1.10E-01	9.60E-01	1.06E-01 EPA, 1999		9.60E-01	1.06E-01 EPA, 1999		3.64E-01	4.00E-02 EPA, 1999		7.19E-05	7.91E-06 EPA, 1999		1.73E-07	1.90E-08 EPA, 1999		7.93E-06	4.71E-02	5.18E-03 EPA, 1999		1.51E-03	1.66E-04 EPA, 1999		5.35E-03
Chromium	1.70E+01	1.00E-02	1.70E-01 EPA, 1999		1.00E-02	1.70E-01 EPA, 1999		7.50E-03	1.27E-01 EPA, 1999		3.30E-03	5.59E-02 VI - EPA, 1999		7.91E-06	1.34E-04 VI - EPA, 1999		5.61E-02		0.00E+00			0.00E+00		0.00E+00
Chrysene	4.77E-02	4.00E-02	1.91E-03 EPA, 1999		4.00E-02	1.91E-03 EPA, 1999		1.87E-02	8.92E-04 EPA, 1999		8.27E-03	3.94E-04 EPA, 1999		1.99E-05	9.49E-07 EPA, 1999		3.95E-04	4.84E-03	2.31E-04 EPA, 1999		1.55E-04	7.39E-06 EPA, 1999		2.38E-04
Copper	1.44E+01	4.00E-02	5.76E-01 EPA, 1999		4.00E-02	5.76E-01 EPA, 1999		4.00E-01	5.76E+00 EPA, 1999			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Fluoranthene	1.56E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Indeno(1,2,3-cd)pyrene	4.17E-01	8.00E-02	3.34E-02 EPA, 1999		8.00E-02	3.34E-02 EPA, 1999		3.90E-03	1.63E-03 EPA, 1999		1.24E-01	5.17E-02 EPA, 1999		2.98E-04	1.24E-04 EPA, 1999		5.18E-02	7.24E-02	3.02E-02 EPA, 1999		2.32E-03	9.67E-04 EPA, 1999		3.12E-02
Lead	1.43E+01	3.00E-02	4.30E-01 EPA, 1999		3.00E-02	4.30E-01 EPA, 1999		4.50E-02	6.45E-01 EPA, 1999		1.80E-04	2.58E-03 EPA, 1999			6.19E-06 EPA, 1999		2.59E-03		0.00E+00			0.00E+00		0.00E+00
Lithium	2.41E+01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Manganese	4.32E+02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Mercury	2.41E-02	4.00E-02	9.64E-04 EPA, 1999		4.00E-02	9.64E-04 EPA, 1999		3.75E-02	9.04E-04 EPA, 1999		3.13E-03	7.54E-05 EPA, 1999		7.52E-06	1.81E-07 EPA, 1999		7.56E-05	1.06E-02	2.55E-04 EPA, 1999		3.42E-04	8.24E-06 EPA, 1999		2.64E-04
Molybdenum	5.65E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Phenanthrene	1.37E-01		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Pyrene	7.28E-02		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Zinc	9.69E+02	5.60E-01	5.43E+02 EPA, 1999		5.60E-01	5.43E+02 EPA, 1999		1.20E-12	1.16E-09 EPA, 1999		5.39E-05	5.22E-02 EPA, 1999		1.29E-07	1.25E-04 EPA, 1999		5.24E-02	3.89E-03	3.77E+00 EPA, 1999		1.25E-04	1.21E-01 EPA, 1999		3.89E+00
LPAH	1.37E-01	7.00E-02	9.59E-03 EPA, 1999*		7.00E-02	9.59E-03 EPA, 1999*		2.02E-02	2.77E-03 EPA, 1999*		5.31E-02	7.27E-03 EPA, 1999*		1.27E-04	1.74E-05 EPA, 1999*		7.29E-03	3.11E-02	4.26E-03 EPA, 1999*		9.98E-04	1.37E-04 EPA, 1999*		4.40E-03
HPAH	9.27E-01	7.00E-02	6.49E-02 EPA, 1999*		7.00E-02	6.49E-02 EPA, 1999*		2.02E-02	1.87E-02 EPA, 1999*		5.31E-02	4.92E-02 EPA, 1999*		1.27E-04	1.18E-04 EPA, 1999*		4.93E-02	3.11E-02	2.88E-02 EPA, 1999*		9.98E-04	9.25E-04 EPA, 1999*		2.98E-02
TOTAL PAHs	1.06E+00		0.00E+00			0.00E+00			0.00E+00			0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE F-1
EXPOSURE POINT CONCENTRATION (mg/kg)
INTRACOASTAL WATERWAY SEDIMENT

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0083		0.0096	95% Student's-t
4,4'-DDT	4.11E-04		0.0023	99% Chebyshev
Acenaphthylene	0.0116		0.0273	95% Chebyshev
Anthracene	0.0201		0.0424	95% Chebyshev
Benzo(a)anthracene	0.0454		0.301	99% Chebyshev
Benzo(a)pyrene	0.0661		0.352	99% Chebyshev
Benzo(b)fluoranthene	0.1		0.491	99% Chebyshev
Benzo(g,h,i)perylene	0.0661		0.357	99% Chebyshev
Benzo(k)fluoranthene	0.0589		0.271	99% Chebyshev
Chrysene	0.0774		0.153	95% Approx. Gamma
Dibenz(a,h)anthracene	0.0435		0.205	99% Chebyshev
Fluoranthene	0.113		0.614	99% Chebyshev
Fluorene	0.0122		0.0243	95% Chebyshev
gamma-Chlordane	3.13E-04		5.70E-04	95% Chebyshev
Hexachlorobenzene	0.01		0.0126	95% Student's-t
Indeno(1,2,3-cd)pyrene	0.0722		0.347	99% Chebyshev
Phenanthrene	0.0746		0.388	99% Chebyshev
Pyrene	0.13		0.678	99% Chebyshev
LPAH	0.1268		0.4916	
HPAH	0.7726		3.769	
TOTAL PAHs	0.8994		4.2606	

TABLE F-2
TOXICITY REFERENCE VALUES

Parameter	Capitella capitata (mg/kg)	Ref.	Comments	Capitella capitata (mg/kg)	Ref.	Comments	Fiddler Crab (mg/kgBW-day)	Ref.	Comments	Black Drum (mg/kgBW-day)	Ref.	Comments	Spotted seatrout (mg/kgBW-day)	Ref.	Comments	Sandpiper (mg/kgBW-day)	Ref.	Comments	Green heron (mg/kgBW-day)	Ref.	Comments
2-Methylnaphthalene	0.07	SQUIRT	ERL	0.67	SQUIRT	ERM															
																		Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
4,4'-DDT	0.001	SQUIRT	ERL	0.007	SQUIRT	ERM	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a				
Acenaphthylene	0.044	SQUIRT	ERL	0.64	SQUIRT	ERM															
Anthracene	0.0853	SQUIRT	ERL	1.1	SQUIRT	ERM															
Benzo(a)anthracene	0.261	SQUIRT	ERL	1.6	SQUIRT	ERM															
Benzo(a)pyrene	0.43	SQUIRT	ERL	1.6	SQUIRT	ERM															
Benzo(b)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
Benzo(g,h,i)perylene	0.67	SQUIRT	AET	0.67	SQUIRT	AET															
Benzo(k)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
Chrysene	0.384	SQUIRT	ERL	2.8	SQUIRT	ERM															
Dibenz(a,h)anthracene	0.0634	SQUIRT	ERL	0.26	SQUIRT	ERM															
Fluoranthene	0.6	SQUIRT	ERL	5.1	SQUIRT	ERM															
Fluorene	0.019	SQUIRT	ERL	0.54	SQUIRT	ERM															
gamma-Chlordane	5.00E-04	SQUIRT	ERL	0.006	SQUIRT	ERM	4.6	Sample, 1996	mammalian TRV for soil	4.6	Sample, 1996	mammalian TRV for soil	4.6	Sample, 1996	mammalian TRV for soil	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird
Hexachlorobenzene	0.006	SQUIRT	AET	0.006	SQUIRT	AET	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil
Indeno(1,2,3-cd)pyrene	0.6	SQUIRT	AET	0.6	SQUIRT	AET															
Phenanthrene	0.24	SQUIRT	ERL	1.5	SQUIRT	ERM															
Pyrene	0.665	SQUIRT	ERL	2.6	SQUIRT	ERM															
LPAH	0.552	SQUIRT	ERL	3.162	SQUIRT	ERM	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil
HPAH	1.7	SQUIRT	ERL	9.6	SQUIRT	ERM	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV
TOTAL PAHs	4.022	SQUIRT	ERL	44.792	SQUIRT	ERM															

Notes:
ERL -- Effects Range-Low
AET -- Apparent Effects Threshold
TEL -- Threshold Effects Level

EPA, 2007a -- DDT
EPA, 2007b -- PAHs

TABLE F-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
CAPITELLA CAPITATA

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
2-Methylnaphthalene	8.30E-03	9.60E-03	7.00E-02	1.19E-01	1.37E-01
4,4'-DDT	4.11E-04	2.30E-03	1.00E-03	4.11E-01	2.30E+00
Acenaphthylene	1.16E-02	2.73E-02	4.40E-02	2.64E-01	6.20E-01
Anthracene	2.01E-02	4.24E-02	8.53E-02	2.36E-01	4.97E-01
Benzo(a)anthracene	4.54E-02	3.01E-01	2.61E-01	1.74E-01	1.15E+00
Benzo(a)pyrene	6.61E-02	3.52E-01	4.30E-01	1.54E-01	8.19E-01
Benzo(b)fluoranthene	1.00E-01	4.91E-01	1.80E+00	5.56E-02	2.73E-01
Benzo(g,h,i)perylene	6.61E-02	3.57E-01	6.70E-01	9.87E-02	5.33E-01
Benzo(k)fluoranthene	5.89E-02	2.71E-01	1.80E+00	3.27E-02	1.51E-01
Chrysene	7.74E-02	1.53E-01	3.84E-01	2.02E-01	3.98E-01
Dibenz(a,h)anthracene	4.35E-02	2.05E-01	6.34E-02	6.86E-01	3.23E+00
Fluoranthene	1.13E-01	6.14E-01	6.00E-01	1.88E-01	1.02E+00
Fluorene	1.22E-02	2.43E-02	1.90E-02	6.42E-01	1.28E+00
gamma-Chlordane	3.13E-04	5.70E-04	5.00E-04	6.26E-01	1.14E+00
Hexachlorobenzene	1.00E-02	1.26E-02	6.00E-03	1.67E+00	2.10E+00
Indeno(1,2,3-cd)pyrene	7.22E-02	3.47E-01	6.00E-01	1.20E-01	5.78E-01
Phenanthrene	7.46E-02	3.88E-01	2.40E-01	3.11E-01	1.62E+00
Pyrene	1.30E-01	6.78E-01	6.65E-01	1.95E-01	1.02E+00
LPAH	1.27E-01	4.92E-01	5.52E-01	2.30E-01	8.91E-01
HPAH	7.73E-01	3.77E+00	1.70E+00	4.54E-01	2.22E+00
TOTAL PAHs	8.99E-01	4.26E+00	4.02E+00	2.24E-01	1.06E+00

TABLE F-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
CAPITELLA CAPITATA -- COMPARED WITH MIDPOINT BETWEEN ERLs and ERMs

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
2-Methylnaphthalene	8.30E-03	9.60E-03	3.70E-01	2.24E-02	2.59E-02
4,4'-DDT	4.11E-04	2.30E-03	4.00E-03	1.03E-01	5.75E-01
Acenaphthylene	1.16E-02	2.73E-02	3.42E-01	3.39E-02	7.98E-02
Anthracene	2.01E-02	4.24E-02	5.93E-01	3.39E-02	7.15E-02
Benzo(a)anthracene	4.54E-02	3.01E-01	9.31E-01	4.88E-02	3.23E-01
Benzo(a)pyrene	6.61E-02	3.52E-01	1.02E+00	6.51E-02	3.47E-01
Benzo(b)fluoranthene	1.00E-01	4.91E-01	1.80E+00	5.56E-02	2.73E-01
Benzo(g,h,i)perylene	6.61E-02	3.57E-01	6.70E-01	9.87E-02	5.33E-01
Benzo(k)fluoranthene	5.89E-02	2.71E-01	1.80E+00	3.27E-02	1.51E-01
Chrysene	7.74E-02	1.53E-01	1.59E+00	4.86E-02	9.61E-02
Dibenz(a,h)anthracene	4.35E-02	2.05E-01	1.62E-01	2.69E-01	1.27E+00
Fluoranthene	1.13E-01	6.14E-01	2.85E+00	3.96E-02	2.15E-01
Fluorene	1.22E-02	2.43E-02	2.80E-01	4.36E-02	8.69E-02
gamma-Chlordane	3.13E-04	5.70E-04	3.25E-03	9.64E-02	1.75E-01
Hexachlorobenzene	1.00E-02	1.26E-02	6.00E-03	1.67E+00	2.10E+00
Indeno(1,2,3-cd)pyrene	7.22E-02	3.47E-01	6.00E-01	1.20E-01	5.78E-01
Phenanthrene	7.46E-02	3.88E-01	8.70E-01	8.57E-02	4.46E-01
Pyrene	1.30E-01	6.78E-01	1.63E+00	7.96E-02	4.15E-01
LPAH	1.27E-01	4.92E-01	1.86E+00	6.83E-02	2.65E-01
HPAH	7.73E-01	3.77E+00	5.65E+00	1.37E-01	6.67E-01
TOTAL PAHs	8.99E-01	4.26E+00	2.44E+01	3.69E-02	1.75E-01

**TABLE F-5
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
FIDDLER CRAB**

SEDIMENT INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Sed concentration (mg/kg)	see data page		
IR	Ingestion rate of sed (kg/day)	1.16E-08	Cammen, 1979	
AF	Chemical Bioavailability in sediment (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
2-Methylnaphthalene	8.30E-03	9.60E-03	1.07E-08	1.23E-08
4,4'-DDT	4.11E-04	2.30E-03	5.28E-10	2.95E-09
Acenaphthylene	1.16E-02	2.73E-02	1.49E-08	3.51E-08
Anthracene	2.01E-02	4.24E-02	2.58E-08	5.45E-08
Benzo(a)anthracene	4.54E-02	3.01E-01	5.83E-08	3.87E-07
Benzo(a)pyrene	6.61E-02	3.52E-01	8.49E-08	4.52E-07
Benzo(b)fluoranthene	1.00E-01	4.91E-01	1.28E-07	6.31E-07
Benzo(g,h,i)perylene	6.61E-02	3.57E-01	8.49E-08	4.59E-07
Benzo(k)fluoranthene	5.89E-02	2.71E-01	7.57E-08	3.48E-07
Chrysene	7.74E-02	1.53E-01	9.94E-08	1.97E-07
Dibenz(a,h)anthracene	4.35E-02	2.05E-01	5.59E-08	2.63E-07
Fluoranthene	1.13E-01	6.14E-01	1.45E-07	7.89E-07
Fluorene	1.22E-02	2.43E-02	1.57E-08	3.12E-08
gamma-Chlordane	3.13E-04	5.70E-04	4.02E-10	7.33E-10
Hexachlorobenzene	1.00E-02	1.26E-02	1.28E-08	1.62E-08
Indeno(1,2,3-cd)pyrene	7.22E-02	3.47E-01	9.27E-08	4.46E-07
Phenanthrene	7.46E-02	3.88E-01	9.58E-08	4.98E-07
Pyrene	1.30E-01	6.78E-01	1.67E-07	8.71E-07
LPAH	1.27E-01	4.92E-01	1.63E-07	6.31E-07
HPAH	7.73E-01	3.77E+00	9.92E-07	4.84E-06
TOTAL PAHs	8.99E-01	4.26E+00	1.16E-06	5.47E-06
FOOD INGESTION				
INTAKE = (Ci * IR * Dfi * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ci	Invertebrate concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	1.16E-08	Cammen, 1979	
Dfi	Dietary fraction of invertebrates (unitless)	1.00E+00	TPWD website	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	ased on width/length eq.	
Chemical	Average Invertebrate	RME Invertebrate	Average Intake	RME Intake
2-Methylnaphthalene	1.34E-02	1.55E-02	1.72E-08	1.99E-08
4,4'-DDT	3.29E-04	1.84E-03	4.22E-10	2.36E-09
Acenaphthylene	1.87E-02	4.40E-02	2.40E-08	5.65E-08
Anthracene	3.24E-02	6.83E-02	4.16E-08	8.77E-08
Benzo(a)anthracene	6.58E-02	4.36E-01	8.46E-08	5.61E-07
Benzo(a)pyrene	1.05E-01	5.60E-01	1.35E-07	7.19E-07
Benzo(b)fluoranthene	1.61E-01	7.91E-01	2.07E-07	1.02E-06
Benzo(g,h,i)perylene	1.06E-01	5.75E-01	1.37E-07	7.38E-07
Benzo(k)fluoranthene	9.48E-02	4.36E-01	1.22E-07	5.60E-07
Chrysene	1.07E-01	2.11E-01	1.37E-07	2.71E-07
Dibenz(a,h)anthracene	7.00E-02	3.30E-01	9.00E-08	4.24E-07

TABLE F-5
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
FIDDLER CRAB

Fluoranthene	1.82E-01	9.89E-01	2.34E-07	1.27E-06
Fluorene	1.96E-02	3.91E-02	2.52E-08	5.03E-08
gamma-Chlordane	1.84E-03	3.35E-03	2.37E-09	4.31E-09
Hexachlorobenzene	5.12E-03	6.45E-03	6.58E-09	8.29E-09
Indeno(1,2,3-cd)pyrene	1.16E-01	5.59E-01	1.49E-07	7.18E-07
Phenanthrene	1.20E-01	6.25E-01	1.54E-07	8.02E-07
Pyrene	2.09E-01	1.09E+00	2.69E-07	1.40E-06
LPAH	2.04E-01	7.91E-01	2.62E-07	1.02E-06
HPAH	1.24E+00	6.07E+00	1.60E-06	7.79E-06
TOTAL PAHs	1.45E+00	6.86E+00	1.86E-06	8.81E-06
TOTAL INTAKE				
INTAKE = Sediment Intake + Food Intake				
Chemical			TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene			2.78E-08	3.22E-08
4,4'-DDT			9.50E-10	5.32E-09
Acenaphthylene			3.89E-08	9.15E-08
Anthracene			6.74E-08	1.42E-07
Benzo(a)anthracene			1.43E-07	9.47E-07
Benzo(a)pyrene			2.20E-07	1.17E-06
Benzo(b)fluoranthene			3.35E-07	1.65E-06
Benzo(g,h,i)perylene			2.22E-07	1.20E-06
Benzo(k)fluoranthene			1.97E-07	9.09E-07
Chrysene			2.37E-07	4.68E-07
Dibenz(a,h)anthracene			1.46E-07	6.87E-07
Fluoranthene			3.79E-07	2.06E-06
Fluorene			4.09E-08	8.15E-08
gamma-Chlordane			2.77E-09	5.04E-09
Hexachlorobenzene			1.94E-08	2.45E-08
Indeno(1,2,3-cd)pyrene			2.42E-07	1.16E-06
Phenanthrene			2.50E-07	1.30E-06
Pyrene			4.36E-07	2.27E-06
LPAH			4.25E-07	1.65E-06
HPAH			2.59E-06	1.26E-05
TOTAL PAHs			3.02E-06	1.43E-05

TABLE F-6
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
SPOTTED SEATROUT

FOOD INGESTION				
INTAKE = (Cf * IR * Dff * AUF)/BW				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Cf	Fish concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	2.60E-02		same as black drum
Dff	Dietary fraction of fish (unitless)	1.00E+00		TPWD website
AUF	Area Use Factor	1		EPA, 1997
BW	Body weight (kg)	1.00E+00		TPWD website

Chemical	Average Fish	RME Fish	Average Intake	RME Intake
2-Methylnaphthalene	3.86E-02	4.46E-02	1.00E-03	1.16E-03
4,4'-DDT	2.38E-04	1.33E-03	6.20E-06	3.47E-05
Acenaphthylene	5.74E-03	1.35E-02	1.49E-04	3.51E-04
Anthracene	1.69E-03	3.56E-03	4.39E-05	9.26E-05
Benzo(a)anthracene	3.00E-02	1.99E-01	7.79E-04	5.17E-03
Benzo(a)pyrene	4.36E-02	2.32E-01	1.13E-03	6.04E-03
Benzo(b)fluoranthene	6.60E-02	3.24E-01	1.72E-03	8.43E-03
Benzo(g,h,i)perylene	4.36E-02	2.36E-01	1.13E-03	6.13E-03
Benzo(k)fluoranthene	3.89E-02	1.79E-01	1.01E-03	4.65E-03
Chrysene	5.11E-02	1.01E-01	1.33E-03	2.63E-03
Dibenz(a,h)anthracene	2.87E-02	1.35E-01	7.46E-04	3.52E-03
Fluoranthene	7.46E-02	4.05E-01	1.94E-03	1.05E-02
Fluorene	6.04E-03	1.20E-02	1.57E-04	3.13E-04
gamma-Chlordane	4.70E-04	8.56E-04	1.22E-05	2.22E-05
Hexachlorobenzene	1.42E-02	1.79E-02	3.69E-04	4.65E-04
Indeno(1,2,3-cd)pyrene	4.77E-02	2.29E-01	1.24E-03	5.95E-03
Phenanthrene	3.69E-02	1.92E-01	9.60E-04	4.99E-03
Pyrene	8.58E-02	4.47E-01	2.23E-03	1.16E-02
LPAH	6.29E-02	2.44E-01	1.64E-03	6.34E-03
HPAH	5.10E-01	2.49E+00	1.33E-02	6.47E-02
TOTAL PAHs	5.94E-01	2.81E+00	1.54E-02	7.31E-02

**TABLE F-7
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
BLACK DRUM**

SEDIMENT INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition	Value	Reference					
Intake	Intake of chemical (mg/kg-day)	calculated						
Sc	Sed concentration (mg/kg)	see data page						
IR	Ingestion rate of sed (kg/day)	2.60E-03	Neill, 1998*					
AF	Chemical Bioavailability in sediment (unitless)	1	EPA, 1997					
AUF	Area Use Factor	1	EPA, 1997					
BW	Body weight (kg)	1.24E+00	PCO BERA					
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
2-Methylnaphthalene	8.30E-03	9.60E-03	1.74E-05	2.02E-05				
4,4'-DDT	4.11E-04	2.30E-03	8.63E-07	4.83E-06				
Acenaphthylene	1.16E-02	2.73E-02	2.44E-05	5.73E-05				
Anthracene	2.01E-02	4.24E-02	4.22E-05	8.90E-05				
Benzo(a)anthracene	4.54E-02	3.01E-01	9.53E-05	6.32E-04				
Benzo(a)pyrene	6.61E-02	3.52E-01	1.39E-04	7.39E-04				
Benzo(b)fluoranthene	1.00E-01	4.91E-01	2.10E-04	1.03E-03				
Benzo(g,h,i)perylene	6.61E-02	3.57E-01	1.39E-04	7.50E-04				
Benzo(k)fluoranthene	5.89E-02	2.71E-01	1.24E-04	5.69E-04				
Chrysene	7.74E-02	1.53E-01	1.63E-04	3.21E-04				
Dibenz(a,h)anthracene	4.35E-02	2.05E-01	9.14E-05	4.31E-04				
Fluoranthene	1.13E-01	6.14E-01	2.37E-04	1.29E-03				
Fluorene	1.22E-02	2.43E-02	2.56E-05	5.10E-05				
gamma-Chlordane	3.13E-04	5.70E-04	6.58E-07	1.20E-06				
Hexachlorobenzene	1.00E-02	1.26E-02	2.10E-05	2.65E-05				
Indeno(1,2,3-cd)pyrene	7.22E-02	3.47E-01	1.52E-04	7.29E-04				
Phenanthrene	7.46E-02	3.88E-01	1.57E-04	8.15E-04				
Pyrene	1.30E-01	6.78E-01	2.73E-04	1.42E-03				
LPAH	1.27E-01	4.92E-01	2.66E-04	1.03E-03				
HPAH	7.73E-01	3.77E+00	1.62E-03	7.92E-03				
TOTAL PAHs	8.99E-01	4.26E+00	1.89E-03	8.95E-03				
FOOD INGESTION								
INTAKE = ((Cw * IR * Dfw * AUF)/(BW)) + (Cc * IR * DFc * AUF) / (BW) + ((Cf * IR * DFf *AUF)/(BW))								
Parameter	Definition	Value	Reference					
Intake	Intake of chemical (mg/kg-day)	calculated						
Cw	Worm concentration (mg/kg)	see FoodConc page						
Cc	Crab concentration (mg/kg)	see FoodConc page						
Cf	Fish concentration (mg/kg)	see FoodConc page						
IR	Ingestion rate of food (kg/day)	2.60E-02	Neill, 1998					
Dfw	Dietary fraction of worms (unitless)	3.33E-01	prof. judgement					
DFc	Dietary fraction of crabs (unitless)	3.33E-01	prof. judgement					
DFf	Dietary fraction of fish (unitless)	3.33E-01	prof. judgement					
AUF	Area Use Factor	1	EPA, 1997					
BW	Body weight (kg)	1.24E+00	PCO BERA					
Chemical	Average Worm	RME Worm	Average Crab	RME Crab	Average Fish	RME Fish	Average Intake	RME Intake
2-Methylnaphthalene	1.34E-02	1.55E-02	0.00E+00	0.00E+00	3.86E-02	4.46E-02	3.63E-04	4.20E-04
4,4'-DDT	3.29E-04	1.84E-03	1.65E-03	9.25E-03	2.38E-04	1.33E-03	1.55E-05	8.69E-05
Acenaphthylene	1.87E-02	4.40E-02	0.00E+00	0.00E+00	5.74E-03	1.35E-02	1.71E-04	4.02E-04
Anthracene	3.24E-02	6.83E-02	6.57E-02	1.39E-01	1.69E-03	3.56E-03	6.98E-04	1.47E-03
Benzo(a)anthracene	6.58E-02	4.36E-01	1.15E-01	7.62E-01	3.00E-02	1.99E-01	1.47E-03	9.77E-03
Benzo(a)pyrene	1.05E-01	5.60E-01	9.92E-03	5.28E-02	4.36E-02	2.32E-01	1.11E-03	5.91E-03
Benzo(b)fluoranthene	1.61E-01	7.91E-01	1.57E-01	7.71E-01	6.60E-02	3.24E-01	2.69E-03	1.32E-02
Benzo(g,h,i)perylene	1.06E-01	5.75E-01	0.00E+00	0.00E+00	4.36E-02	2.36E-01	1.05E-03	5.67E-03
Benzo(k)fluoranthene	9.48E-02	4.36E-01	0.00E+00	0.00E+00	3.89E-02	1.79E-01	9.35E-04	4.30E-03
Chrysene	1.07E-01	2.11E-01	9.98E-02	1.97E-01	5.11E-02	1.01E-01	1.80E-03	3.56E-03
Dibenz(a,h)anthracene	7.00E-02	3.30E-01	0.00E+00	0.00E+00	2.87E-02	1.35E-01	6.91E-04	3.25E-03
Fluoranthene	1.82E-01	9.89E-01	1.51E+00	8.19E+00	7.46E-02	4.05E-01	1.23E-02	6.70E-02
Fluorene	1.96E-02	3.91E-02	0.00E+00	0.00E+00	6.04E-03	1.20E-02	1.80E-04	3.58E-04
gamma-Chlordane	1.84E-03	3.35E-03	7.20E-04	1.31E-03	4.70E-04	8.56E-04	2.12E-05	3.86E-05
Hexachlorobenzene	5.12E-03	6.45E-03	5.00E-02	6.30E-02	1.42E-02	1.79E-02	4.85E-04	6.11E-04
Indeno(1,2,3-cd)pyrene	1.16E-01	5.59E-01	0.00E+00	0.00E+00	4.77E-02	2.29E-01	1.15E-03	5.51E-03
Phenanthrene	1.20E-01	6.25E-01	0.00E+00	0.00E+00	3.69E-02	1.92E-01	1.10E-03	5.71E-03
Pyrene	2.09E-01	1.09E+00	0.00E+00	0.00E+00	8.58E-02	4.47E-01	2.06E-03	1.08E-02
LPAH	2.04E-01	7.91E-01	4.15E-01	1.61E+00	6.29E-02	2.44E-01	4.77E-03	1.85E-02
HPAH	1.24E+00	6.07E+00	2.53E+00	1.23E+01	5.10E-01	2.49E+00	2.99E-02	1.46E-01

TABLE F-7
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
BLACK DRUM

TOTAL PAHs	1.45E+00	6.86E+00	2.94E+00	1.39E+01	5.94E-01	2.81E+00	3.48E-02	1.65E-01
TOTAL INTAKE								
INTAKE = Sediment Intake + Food Intake								
Chemical							TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene							3.81E-04	4.40E-04
4,4'-DDT							1.64E-05	9.17E-05
Acenaphthylene							1.95E-04	4.59E-04
Anthracene							7.40E-04	1.56E-03
Benzo(a)anthracene							1.57E-03	1.04E-02
Benzo(a)pyrene							1.25E-03	6.65E-03
Benzo(b)fluoranthene							2.90E-03	1.42E-02
Benzo(g,h,i)perylene							1.19E-03	6.42E-03
Benzo(k)fluoranthene							1.06E-03	4.87E-03
Chrysene							1.97E-03	3.88E-03
Dibenz(a,h)anthracene							7.82E-04	3.68E-03
Fluoranthene							1.26E-02	6.83E-02
Fluorene							2.05E-04	4.09E-04
gamma-Chlordane							2.19E-05	3.98E-05
Hexachlorobenzene							5.06E-04	6.37E-04
Indeno(1,2,3-cd)pyrene							1.30E-03	6.24E-03
Phenanthrene							1.25E-03	6.53E-03
Pyrene							2.34E-03	1.22E-02
LPAH							5.03E-03	1.95E-02
HPAH							3.16E-02	1.54E-01
TOTAL PAHs							3.67E-02	1.74E-01

Notes:

* Sediment ingestion was assumed to be 10% of dietary intake

**TABLE F-8
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
SANDPIPER**

SEDIMENT INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Sc	Sediment concentration (mg/kg)	see data page				
IR	Ingestion rate of sed (kg/day)	2.10E-02		EPA, 1993		
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
2-Methylnaphthalene	8.30E-03	9.60E-03	8.11E-04	9.38E-04		
4,4'-DDT	4.11E-04	2.30E-03	4.01E-05	2.25E-04		
Acenaphthylene	1.16E-02	2.73E-02	1.13E-03	2.67E-03		
Anthracene	2.01E-02	4.24E-02	1.96E-03	4.14E-03		
Benzo(a)anthracene	4.54E-02	3.01E-01	4.43E-03	2.94E-02		
Benzo(a)pyrene	6.61E-02	3.52E-01	6.46E-03	3.44E-02		
Benzo(b)fluoranthene	1.00E-01	4.91E-01	9.77E-03	4.80E-02		
Benzo(g,h,i)perylene	6.61E-02	3.57E-01	6.46E-03	3.49E-02		
Benzo(k)fluoranthene	5.89E-02	2.71E-01	5.75E-03	2.65E-02		
Chrysene	7.74E-02	1.53E-01	7.56E-03	1.49E-02		
Dibenz(a,h)anthracene	4.35E-02	2.05E-01	4.25E-03	2.00E-02		
Fluoranthene	1.13E-01	6.14E-01	1.10E-02	6.00E-02		
Fluorene	1.22E-02	2.43E-02	1.19E-03	2.37E-03		
gamma-Chlordane	3.13E-04	5.70E-04	3.06E-05	5.57E-05		
Hexachlorobenzene	1.00E-02	1.26E-02	9.77E-04	1.23E-03		
Indeno(1,2,3-cd)pyrene	7.22E-02	3.47E-01	7.05E-03	3.39E-02		
Phenanthrene	7.46E-02	3.88E-01	7.29E-03	3.79E-02		
Pyrene	1.30E-01	6.78E-01	1.27E-02	6.62E-02		
LPAH	1.27E-01	4.92E-01	1.24E-02	4.80E-02		
HPAH	7.73E-01	3.77E+00	7.55E-02	3.68E-01		
TOTAL PAHs	8.99E-01	4.26E+00	8.78E-02	4.16E-01		
FOOD INGESTION						
INTAKE = ((Cc * IR * Dfc * AUF)/(BW) + (Cw * IR * DFwa * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cc	Crab concentration (mg/kg)	see FoodConc page				
Cw	Worm concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.08E-01		EPA, 1993		
Dfc	Dietary fraction of crabs (unitless)	4.00E-01		prof. judgement		
DFw	Dietary fraction of worms (unitless)	6.00E-01		prof. judgement		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Crab	RME Crab	Average Worm	RME Worm	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	1.34E-02	1.55E-02	4.03E-03	4.66E-03
4,4'-DDT	1.65E-03	9.25E-03	3.29E-04	1.84E-03	4.31E-04	2.41E-03
Acenaphthylene	0.00E+00	0.00E+00	1.87E-02	4.40E-02	5.63E-03	1.32E-02
Anthracene	6.57E-02	1.39E-01	3.24E-02	6.83E-02	2.30E-02	4.84E-02
Benzo(a)anthracene	1.15E-01	7.62E-01	6.58E-02	4.36E-01	4.29E-02	2.85E-01
Benzo(a)pyrene	9.92E-03	5.28E-02	1.05E-01	5.60E-01	3.37E-02	1.79E-01
Benzo(b)fluoranthene	1.57E-01	7.71E-01	1.61E-01	7.91E-01	8.01E-02	3.93E-01
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	1.06E-01	5.75E-01	3.21E-02	1.73E-01
Benzo(k)fluoranthene	0.00E+00	0.00E+00	9.48E-02	4.36E-01	2.86E-02	1.32E-01
Chrysene	9.98E-02	1.97E-01	1.07E-01	2.11E-01	5.23E-02	1.03E-01
Dibenz(a,h)anthracene	0.00E+00	0.00E+00	7.00E-02	3.30E-01	2.11E-02	9.95E-02
Fluoranthene	1.51E+00	8.19E+00	1.82E-01	9.89E-01	3.58E-01	1.94E+00
Fluorene	0.00E+00	0.00E+00	1.96E-02	3.91E-02	5.92E-03	1.18E-02
gamma-Chlordane	7.20E-04	1.31E-03	1.84E-03	3.35E-03	7.00E-04	1.27E-03
Hexachlorobenzene	5.00E-02	6.30E-02	5.12E-03	6.45E-03	1.16E-02	1.46E-02
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	1.16E-01	5.59E-01	3.50E-02	1.68E-01
Phenanthrene	0.00E+00	0.00E+00	1.20E-01	6.25E-01	3.62E-02	1.88E-01
Pyrene	0.00E+00	0.00E+00	2.09E-01	1.09E+00	6.31E-02	3.29E-01

TABLE F-8
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
SANDPIPER

LPAH	4.15E-01	1.61E+00	2.04E-01	7.91E-01	1.45E-01	5.62E-01
HPAH	2.53E+00	1.23E+01	1.24E+00	6.07E+00	8.83E-01	4.31E+00
TOTAL PAHs	2.94E+00	1.39E+01	1.45E+00	6.86E+00	1.03E+00	4.87E+00
TOTAL INTAKE						
INTAKE = Sediment Intake + Food Intake						
Chemical					TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene					4.84E-03	5.60E-03
4,4'-DDT					4.71E-04	2.64E-03
Acenaphthylene					6.76E-03	1.59E-02
Anthracene					2.49E-02	5.26E-02
Benzo(a)anthracene					4.74E-02	3.14E-01
Benzo(a)pyrene					4.01E-02	2.14E-01
Benzo(b)fluoranthene					8.98E-02	4.41E-01
Benzo(g,h,i)perylene					3.85E-02	2.08E-01
Benzo(k)fluoranthene					3.43E-02	1.58E-01
Chrysene					5.98E-02	1.18E-01
Dibenz(a,h)anthracene					2.54E-02	1.19E-01
Fluoranthene					3.69E-01	2.00E+00
Fluorene					7.11E-03	1.42E-02
gamma-Chlordane					7.30E-04	1.33E-03
Hexachlorobenzene					1.26E-02	1.58E-02
Indeno(1,2,3-cd)pyrene					4.21E-02	2.02E-01
Phenanthrene					4.35E-02	2.26E-01
Pyrene					7.58E-02	3.95E-01
LPAH					1.57E-01	6.10E-01
HPAH					9.58E-01	4.67E+00
TOTAL PAHs					1.12E+00	5.28E+00

TABLE F-9
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
GREEN HERON

FOOD INGESTION						
$\text{INTAKE} = ((C_f * IR * D_{ff} * AUF) / (BW)) + (C_c * IR * D_{fc} * AUF) / (BW))$						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
C _f	Fish concentration (mg/kg)	see FoodConc page				
C _c	Crab concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.13E-01			EPA, 1993	
D _{ff}	Dietary fraction of fish (unitless)	7.50E-01			Kent, 1986	
D _{fc}	Dietary fraction of crab (unitless)	2.50E-01			Kent, 1986	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	3.75E-01			Dunning, 1993	

Chemical	Average Fish	RME Fish	Average Crab	RME Crab	Average Intake	RME Intake
2-Methylnaphthalene	3.86E-02	4.46E-02	0.00E+00	0.00E+00	8.68E-03	1.00E-02
4,4'-DDT	2.38E-04	1.33E-03	1.65E-03	9.25E-03	1.78E-04	9.94E-04
Acenaphthylene	5.74E-03	1.35E-02	0.00E+00	0.00E+00	1.29E-03	3.04E-03
Anthracene	1.69E-03	3.56E-03	6.57E-02	1.39E-01	5.31E-03	1.12E-02
Benzo(a)anthracene	3.00E-02	1.99E-01	1.15E-01	7.62E-01	1.54E-02	1.02E-01
Benzo(a)pyrene	4.36E-02	2.32E-01	9.92E-03	5.28E-02	1.06E-02	5.62E-02
Benzo(b)fluoranthene	6.60E-02	3.24E-01	1.57E-01	7.71E-01	2.66E-02	1.31E-01
Benzo(g,h,i)perylene	4.36E-02	2.36E-01	0.00E+00	0.00E+00	9.82E-03	5.30E-02
Benzo(k)fluoranthene	3.89E-02	1.79E-01	0.00E+00	0.00E+00	8.75E-03	4.02E-02
Chrysene	5.11E-02	1.01E-01	9.98E-02	1.97E-01	1.90E-02	3.75E-02
Dibenz(a,h)anthracene	2.87E-02	1.35E-01	0.00E+00	0.00E+00	6.46E-03	3.04E-02
Fluoranthene	7.46E-02	4.05E-01	1.51E+00	8.19E+00	1.30E-01	7.05E-01
Fluorene	6.04E-03	1.20E-02	0.00E+00	0.00E+00	1.36E-03	2.71E-03
gamma-Chlordane	4.70E-04	8.56E-04	7.20E-04	1.31E-03	1.60E-04	2.91E-04
Hexachlorobenzene	1.42E-02	1.79E-02	5.00E-02	6.30E-02	6.95E-03	8.75E-03
Indeno(1,2,3-cd)pyrene	4.77E-02	2.29E-01	0.00E+00	0.00E+00	1.07E-02	5.15E-02
Phenanthrene	3.69E-02	1.92E-01	0.00E+00	0.00E+00	8.31E-03	4.32E-02
Pyrene	8.58E-02	4.47E-01	0.00E+00	0.00E+00	1.93E-02	1.01E-01
LPAH	6.29E-02	2.44E-01	4.15E-01	1.61E+00	4.52E-02	1.75E-01
HPAH	5.10E-01	2.49E+00	2.53E+00	1.23E+01	3.04E-01	1.48E+00
TOTAL PAHs	5.94E-01	2.81E+00	2.94E+00	1.39E+01	3.54E-01	1.68E+00

TABLE F-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
FIDDLER CRAB

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Fiddler Crab	Average EHQ	RME EHQ
2-Methylnaphthalene	2.78E-08	3.22E-08	1.47E-01	6.46E-09	3.62E-08
4,4'-DDT	9.50E-10	5.32E-09			
Acenaphthylene	3.89E-08	9.15E-08			
Anthracene	6.74E-08	1.42E-07			
Benzo(a)anthracene	1.43E-07	9.47E-07			
Benzo(a)pyrene	2.20E-07	1.17E-06			
Benzo(b)fluoranthene	3.35E-07	1.65E-06			
Benzo(g,h,i)perylene	2.22E-07	1.20E-06			
Benzo(k)fluoranthene	1.97E-07	9.09E-07			
Chrysene	2.37E-07	4.68E-07			
Dibenz(a,h)anthracene	1.46E-07	6.87E-07	4.60E+00 2.25E-01	6.02E-10 8.63E-08	1.10E-09 1.09E-07
Fluoranthene	3.79E-07	2.06E-06			
Fluorene	4.09E-08	8.15E-08			
gamma-Chlordane	2.77E-09	5.04E-09			
Hexachlorobenzene	1.94E-08	2.45E-08			
Indeno(1,2,3-cd)pyrene	2.42E-07	1.16E-06			
Phenanthrene	2.50E-07	1.30E-06			
Pyrene	4.36E-07	2.27E-06			
LPAH	4.25E-07	1.65E-06			
HPAH	2.59E-06	1.26E-05			
TOTAL PAHs	3.02E-06	1.43E-05			

TABLE F-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
BLACK DRUM

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Black Drum	Average EHQ	RME EHQ
2-Methylnaphthalene	3.81E-04	4.40E-04	1.47E-01	1.11E-04	6.24E-04
4,4'-DDT	1.64E-05	9.17E-05			
Acenaphthylene	1.95E-04	4.59E-04			
Anthracene	7.40E-04	1.56E-03			
Benzo(a)anthracene	1.57E-03	1.04E-02			
Benzo(a)pyrene	1.25E-03	6.65E-03			
Benzo(b)fluoranthene	2.90E-03	1.42E-02			
Benzo(g,h,i)perylene	1.19E-03	6.42E-03			
Benzo(k)fluoranthene	1.06E-03	4.87E-03			
Chrysene	1.97E-03	3.88E-03			
Dibenz(a,h)anthracene	7.82E-04	3.68E-03			
Fluoranthene	1.26E-02	6.83E-02			
Fluorene	2.05E-04	4.09E-04			
gamma-Chlordane	2.19E-05	3.98E-05	4.60E+00	4.75E-06	8.65E-06
Hexachlorobenzene	5.06E-04	6.37E-04	2.25E-01	2.25E-03	2.83E-03
Indeno(1,2,3-cd)pyrene	1.30E-03	6.24E-03	6.56E+01	7.67E-05	2.97E-04
Phenanthrene	1.25E-03	6.53E-03			
Pyrene	2.34E-03	1.22E-02			
LPAH	5.03E-03	1.95E-02			
HPAH	3.16E-02	1.54E-01			
TOTAL PAHs	3.67E-02	1.74E-01	9.31E+00	3.39E-03	1.65E-02

TABLE F-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
SPOTTED SEATROUT

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Spotted Seatrout	Average EHQ	RME EHQ
2-Methylnaphthalene	1.00E-03	1.16E-03			
4,4'-DDT	6.20E-06	3.47E-05	1.47E-01	4.22E-05	2.36E-04
Acenaphthylene	1.49E-04	3.51E-04			
Anthracene	4.39E-05	9.26E-05			
Benzo(a)anthracene	7.79E-04	5.17E-03			
Benzo(a)pyrene	1.13E-03	6.04E-03			
Benzo(b)fluoranthene	1.72E-03	8.43E-03			
Benzo(g,h,i)perylene	1.13E-03	6.13E-03			
Benzo(k)fluoranthene	1.01E-03	4.65E-03			
Chrysene	1.33E-03	2.63E-03			
Dibenz(a,h)anthracene	7.46E-04	3.52E-03			
Fluoranthene	1.94E-03	1.05E-02			
Fluorene	1.57E-04	3.13E-04			
gamma-Chlordane	1.22E-05	2.22E-05	4.60E+00	2.66E-06	4.84E-06
Hexachlorobenzene	3.69E-04	4.65E-04	2.25E-01	1.64E-03	2.07E-03
Indeno(1,2,3-cd)pyrene	1.24E-03	5.95E-03			
Phenanthrene	9.60E-04	4.99E-03			
Pyrene	2.23E-03	1.16E-02			
LPAH	1.64E-03	6.34E-03	6.56E+01	2.49E-05	9.66E-05
HPAH	1.33E-02	6.47E-02	9.31E+00	1.42E-03	6.95E-03
TOTAL PAHs	1.54E-02	7.31E-02			

TABLE F-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
SANDPIPER

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Sandpiper	Average EHQ	RME EHQ
2-Methylnaphthalene	4.84E-03	5.60E-03			
4,4'-DDT	4.71E-04	2.64E-03	2.27E-01	2.08E-03	1.16E-02
Acenaphthylene	6.76E-03	1.59E-02			
Anthracene	2.49E-02	5.26E-02			
Benzo(a)anthracene	4.74E-02	3.14E-01			
Benzo(a)pyrene	4.01E-02	2.14E-01			
Benzo(b)fluoranthene	8.98E-02	4.41E-01			
Benzo(g,h,i)perylene	3.85E-02	2.08E-01			
Benzo(k)fluoranthene	3.43E-02	1.58E-01			
Chrysene	5.98E-02	1.18E-01			
Dibenz(a,h)anthracene	2.54E-02	1.19E-01			
Fluoranthene	3.69E-01	2.00E+00			
Fluorene	7.11E-03	1.42E-02			
gamma-Chlordane	7.30E-04	1.33E-03	2.14E+00	3.41E-04	6.22E-04
Hexachlorobenzene	1.26E-02	1.58E-02	2.25E-01	5.59E-02	7.04E-02
Indeno(1,2,3-cd)pyrene	4.21E-02	2.02E-01			
Phenanthrene	4.35E-02	2.26E-01			
Pyrene	7.58E-02	3.95E-01			
LPAH	1.57E-01	6.10E-01	6.56E+01	2.40E-03	9.29E-03
HPAH	9.58E-01	4.67E+00	9.31E+00	1.03E-01	5.02E-01
TOTAL PAHs	1.12E+00	5.28E+00			

TABLE F-14
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT
GREEN HERON

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Green Heron	Average EHQ	RME EHQ
2-Methylnaphthalene	8.68E-03	1.00E-02			
4,4'-DDT	1.78E-04	9.94E-04	2.27E-01	7.82E-04	4.38E-03
Acenaphthylene	1.29E-03	3.04E-03			
Anthracene	5.31E-03	1.12E-02			
Benzo(a)anthracene	1.54E-02	1.02E-01			
Benzo(a)pyrene	1.06E-02	5.62E-02			
Benzo(b)fluoranthene	2.66E-02	1.31E-01			
Benzo(g,h,i)perylene	9.82E-03	5.30E-02			
Benzo(k)fluoranthene	8.75E-03	4.02E-02			
Chrysene	1.90E-02	3.75E-02			
Dibenz(a,h)anthracene	6.46E-03	3.04E-02			
Fluoranthene	1.30E-01	7.05E-01			
Fluorene	1.36E-03	2.71E-03			
gamma-Chlordane	1.60E-04	2.91E-04	2.14E+00	7.46E-05	1.36E-04
Hexachlorobenzene	6.95E-03	8.75E-03	2.25E-01	3.09E-02	3.89E-02
Indeno(1,2,3-cd)pyrene	1.07E-02	5.15E-02			
Phenanthrene	8.31E-03	4.32E-02			
Pyrene	1.93E-02	1.01E-01			
LPAH	4.52E-02	1.75E-01	6.56E+01	6.90E-04	2.67E-03
HPAH	3.04E-01	1.48E+00	9.31E+00	3.27E-02	1.59E-01
TOTAL PAHs	3.54E-01	1.68E+00			

TABLE F-15
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
Cfood =	Chemical Concentration in food (mg/kg dry)									
Csed =	Chemical Concentration in soil (mg/kg dry)									
BSAF	Biota to Sediment Accumulation Factor (unitless)									
BCF =	Bioconcentration Factor (unitless)									
Compound	Average Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
2-Methylnaphthalene	8.30E-03	1.61E+00	1.34E-02	EPA, 1999		0.00E+00		4.65E+00	3.86E-02	Brunson et al. (1998)
4,4'-DDT	4.11E-04	8.00E-01	3.29E-04	BSAF DB	4.02E+00	1.65E-03	BSAF DB	5.80E-01	2.38E-04	WSDOH, 1995
Acenaphthylene	1.16E-02	1.61E+00	1.87E-02	EPA, 1999		0.00E+00		0.495	5.74E-03	WSDOH, 1995
Anthracene	2.01E-02	1.61E+00	3.24E-02	EPA, 1999	3.27E+00	6.57E-02	BSAF DB	8.40E-02	1.69E-03	WSDOH, 1995
Benzo(a)anthracene	4.54E-02	1.45E+00	6.58E-02	EPA, 1999	2.53E+00	1.15E-01	BSAF DB	6.60E-01	3.00E-02	WSDOH, 1995
Benzo(a)pyrene	6.61E-02	1.59E+00	1.05E-01	EPA, 1999	1.50E-01	9.92E-03	BSAF DB	6.60E-01	4.36E-02	WSDOH, 1995
Benzo(b)fluoranthene	1.00E-01	1.61E+00	1.61E-01	EPA, 1999	1.57E+00	1.57E-01	BSAF DB	6.60E-01	6.60E-02	WSDOH, 1995
Benzo(g,h,i)perylene	6.61E-02	1.61E+00	1.06E-01	EPA, 1999		0.00E+00		6.60E-01	4.36E-02	WSDOH, 1995
Benzo(k)fluoranthene	5.89E-02	1.61E+00	9.48E-02	EPA, 1999		0.00E+00		6.60E-01	3.89E-02	WSDOH, 1995
Chrysene	7.74E-02	1.38E+00	1.07E-01	EPA, 1999	1.29E+00	9.98E-02	BSAF DB	6.60E-01	5.11E-02	WSDOH, 1995
Dibenz(a,h)anthracene	4.35E-02	1.61E+00	7.00E-02	EPA, 1999		0.00E+00		6.60E-01	2.87E-02	WSDOH, 1995
Fluoranthene	1.13E-01	1.61E+00	1.82E-01	EPA, 1999	1.33E+01	1.51E+00	BSAF DB	6.60E-01	7.46E-02	WSDOH, 1995
Fluorene	1.22E-02	1.61E+00	1.96E-02	EPA, 1999		0.00E+00		4.95E-01	6.04E-03	WSDOH, 1995
gamma-Chlordane	3.13E-04	5.88E+00	1.84E-03	BSAF DB	2.30E+00	7.20E-04	BSAF DB	1.50E+00	4.70E-04	BSAF DB
Hexachlorobenzene	1.00E-02	5.12E-01	5.12E-03	BSAF DB	5.00E+00	5.00E-02	BSAF DB	1.42E+00	1.42E-02	Max value from Calcasieu RI
Indeno(1,2,3-cd)pyrene	7.22E-02	1.61E+00	1.16E-01	EPA, 1999		0.00E+00		6.60E-01	4.77E-02	WSDOH, 1995
Phenanthrene	7.46E-02	1.61E+00	1.20E-01	EPA, 1999		0.00E+00		4.95E-01	3.69E-02	WSDOH, 1995
Pyrene	1.30E-01	1.61E+00	2.09E-01	EPA, 1999		0.00E+00		6.60E-01	8.58E-02	WSDOH, 1995
LPAH	1.27E-01	1.61E+00	2.04E-01	EPA, 1999	3.27E+00	4.15E-01	max PAH	4.96E-01	6.29E-02	WSDOH, 1995
HPAH	7.73E-01	1.61E+00	1.24E+00	EPA, 1999	3.27E+00	2.53E+00	max PAH	6.60E-01	5.10E-01	WSDOH, 1995
TOTAL PAHs	8.99E-01	1.61E+00	1.45E+00	EPA, 1999	3.27E+00	2.94E+00	max PAH	6.60E-01	5.94E-01	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE F-16
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
Cfood =	Chemical Concentration in food (mg/kg dry)									
Csed =	Chemical Concentration in soil (mg/kg dry)									
BSAF	Biota to Sediment Accumulation Factor (unitless)									
BCF =	Bioconcentration Factor (unitless)									
Compound	RME Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
2-Methylnaphthalene	9.60E-03	1.61E+00	1.55E-02	EPA, 1999		0.00E+00		4.65E+00	4.46E-02	Brunson et al. (1998)
4,4'-DDT	2.30E-03	8.00E-01	1.84E-03	BSAF DB	4.02E+00	9.25E-03	BSAF DB	5.80E-01	1.33E-03	WSDOH, 1995
Acenaphthylene	2.73E-02	1.61E+00	4.40E-02	EPA, 1999		0.00E+00		0.495	1.35E-02	WSDOH, 1995
Anthracene	4.24E-02	1.61E+00	6.83E-02	EPA, 1999	3.27E+00	1.39E-01	BSAF DB	8.40E-02	3.56E-03	WSDOH, 1995
Benzo(a)anthracene	3.01E-01	1.45E+00	4.36E-01	EPA, 1999	2.53E+00	7.62E-01	BSAF DB	6.60E-01	1.99E-01	WSDOH, 1995
Benzo(a)pyrene	3.52E-01	1.59E+00	5.60E-01	EPA, 1999	1.50E-01	5.28E-02	BSAF DB	6.60E-01	2.32E-01	WSDOH, 1995
Benzo(b)fluoranthene	4.91E-01	1.61E+00	7.91E-01	EPA, 1999	1.57E+00	7.71E-01	BSAF DB	6.60E-01	3.24E-01	WSDOH, 1995
Benzo(g,h,i)perylene	3.57E-01	1.61E+00	5.75E-01	EPA, 1999		0.00E+00		6.60E-01	2.36E-01	WSDOH, 1995
Benzo(k)fluoranthene	2.71E-01	1.61E+00	4.36E-01	EPA, 1999		0.00E+00		6.60E-01	1.79E-01	WSDOH, 1995
Chrysene	1.53E-01	1.38E+00	2.11E-01	EPA, 1999	1.29E+00	1.97E-01	BSAF DB	6.60E-01	1.01E-01	WSDOH, 1995
Dibenz(a,h)anthracene	2.05E-01	1.61E+00	3.30E-01	EPA, 1999		0.00E+00		6.60E-01	1.35E-01	WSDOH, 1995
Fluoranthene	6.14E-01	1.61E+00	9.89E-01	EPA, 1999	1.33E+01	8.19E+00	BSAF DB	6.60E-01	4.05E-01	WSDOH, 1995
Fluorene	2.43E-02	1.61E+00	3.91E-02	EPA, 1999		0.00E+00		4.95E-01	1.20E-02	WSDOH, 1995
gamma-Chlordane	5.70E-04	5.88E+00	3.35E-03	BSAF DB	2.30E+00	1.31E-03	BSAF DB	1.50E+00	8.56E-04	BSAF DB
Hexachlorobenzene	1.26E-02	5.12E-01	6.45E-03	BSAF DB	5.00E+00	6.30E-02	BSAF DB	1.42E+00	1.79E-02	Max value from Calcasieu RI
Indeno(1,2,3-cd)pyrene	3.47E-01	1.61E+00	5.59E-01	EPA, 1999		0.00E+00		6.60E-01	2.29E-01	WSDOH, 1995
Phenanthrene	3.88E-01	1.61E+00	6.25E-01	EPA, 1999		0.00E+00		4.95E-01	1.92E-01	WSDOH, 1995
Pyrene	6.78E-01	1.61E+00	1.09E+00	EPA, 1999		0.00E+00		6.60E-01	4.47E-01	WSDOH, 1995
LPAH	4.92E-01	1.61E+00	7.91E-01	EPA, 1999	3.27E+00	1.61E+00	max PAH	4.96E-01	2.44E-01	WSDOH, 1995
HPAH	3.77E+00	1.61E+00	6.07E+00	EPA, 1999	3.27E+00	1.23E+01	max PAH	6.60E-01	2.49E+00	WSDOH, 1995
TOTAL PAHs	4.26E+00	1.61E+00	6.86E+00	EPA, 1999	3.27E+00	1.39E+01	max PAH	6.60E-01	2.81E+00	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE G-1
EXPOSURE POINT CONCENTRATION (mg/kg)
INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND DATA

Parameter	Average		95% UCL	Statistic Used
4,4'-DDT	1.56E-04		3.82E-04	95% Chebyshev
Arsenic	5.81E+00		7.74E+00	95% Student's-t
Benzo(b)fluoranthene	8.70E-03		2.41E-02	95% Chebyshev
Copper	8.14E+00		1.13E+01	95% Student's-t
Hexachlorobenzene	0.0178		0.0187	95% Student's-t
Mercury	1.76E-02		2.73E-02	95% Approx. Gamma
Nickel	1.49E+01		1.99E+01	95% Student's-t
Zinc	3.60E+01		4.45E+01	95% Student's-t
LPAH				
HPAH	8.70E-03		2.41E-02	
TOTAL PAHs	0.0087		0.0241	

TABLE G-2
TOXICITY REFERENCE VALUES

Parameter	Capitella capitata (mg/kg)	Ref.	Comments	Fiddler Crab (mg/kgBW-day)	Ref.	Comments	Black Drum (mg/kgBW-day)	Ref.	Comments	Spotted seatrout (mg/kgBW-day)	Ref.	Comments	Sandpiper (mg/kgBW-day)	Ref.	Comments	Green heron (mg/kgBW-day)	Ref.	Comments
4,4'-DDT	0.001	SQUIRT	ERL	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Arsenic	8.2	SQUIRT	ERL															
Benzo(b)fluoranthene	1.8	SQUIRT	AET															
Copper	34	SQUIRT	ERL	5.6	EPA, 2007c	mammalian TRV for soil	5.6	EPA, 2007c	mammalian TRV for soil	5.6	EPA, 2007c	mammalian TRV for soil	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Hexachlorobenzene	0.006	SQUIRT	AET	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil	0.225	EPA, 1999	avian TRV for soil
Mercury	0.15	SQUIRT	ERL	1.01	EPA, 1999	mammalian TRV for soil	1.01	EPA, 1999	mammalian TRV for soil	1.01	EPA, 1999	mammalian TRV for soil	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)	3.25	EPA, 1999	Acute (5 days) LOAEL for mortality in coturnix quail (dose 325 with uncertainty factor of 0.01)
Nickel	20.9	SQUIRT	ERL	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Zinc	150	SQUIRT	ERL	75.4	EPA, 2007e	mammalian TRV for soil	75.4	EPA, 2007e	mammalian TRV for soil	75.4	EPA, 2007e	mammalian TRV for soil	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups	66.1	EPA, 2007e	Geometric mean of NOAEL values within the reproductive and growth effect groups
LPAH	0.552	SQUIRT	ERL	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil
HPAH	1.7	SQUIRT	ERL	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV
TOTAL PAHs	4.022	SQUIRT	ERL															

Notes:
ERL -- Effects Range-Low
AET -- Apparent Effects Threshold
TEL -- Threshold Effects Level

EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2007f -- Selenium
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead
EPA, 2005f -- Dieldrin
EPA, 2005g -- Barium

TABLE G-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
CAPITELLA CAPITATA

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDT	1.56E-04	3.82E-04	1.00E-03	1.56E-01	3.82E-01
Arsenic	5.81E+00	7.74E+00	8.20E+00	7.09E-01	9.44E-01
Benzo(b)fluoranthene	8.70E-03	2.41E-02	1.80E+00	4.83E-03	1.34E-02
Copper	8.14E+00	1.13E+01	3.40E+01	2.39E-01	3.34E-01
Hexachlorobenzene	1.78E-02	1.87E-02	6.00E-03	2.97E+00	3.12E+00
Mercury	1.76E-02	2.73E-02	1.50E-01	1.17E-01	1.82E-01
Nickel	1.49E+01	1.99E+01	2.09E+01	7.13E-01	9.54E-01
Zinc	3.60E+01	4.45E+01	1.50E+02	2.40E-01	2.97E-01
LPAH	0.00E+00	0.00E+00	5.52E-01	0.00E+00	0.00E+00
HPAH	8.70E-03	2.41E-02	1.70E+00	5.12E-03	1.42E-02
TOTAL PAHs	8.70E-03	2.41E-02	4.02E+00	2.16E-03	5.99E-03

**TABLE G-4
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
FIDDLER CRAB**

SEDIMENT INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Sed concentration (mg/kg)	see data page		
IR	Ingestion rate of sed (kg/day)	1.16E-08	Cammen, 1979	
AF	Chemical Bioavailability in sediment (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
4,4'-DDT	1.56E-04	3.82E-04	2.00E-10	4.90E-10
Arsenic	5.81E+00	7.74E+00	7.47E-06	9.94E-06
Benzo(b)fluoranthene	8.70E-03	2.41E-02	1.12E-08	3.10E-08
Copper	8.14E+00	1.13E+01	1.05E-05	1.46E-05
Hexachlorobenzene	1.78E-02	1.87E-02	2.29E-08	2.40E-08
Mercury	1.76E-02	2.73E-02	2.26E-08	3.51E-08
Nickel	1.49E+01	1.99E+01	1.92E-05	2.56E-05
Zinc	3.60E+01	4.45E+01	4.63E-05	5.72E-05
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	8.70E-03	2.41E-02	1.12E-08	3.10E-08
TOTAL PAHs	8.70E-03	2.41E-02	1.12E-08	3.10E-08
FOOD INGESTION				
INTAKE = (Ci * IR * Dfi * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ci	Invertebrate concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	1.16E-08	Cammen, 1979	
Dfi	Dietary fraction of invertebrates (unitless)	1.00E+00	TPWD website	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	ased on width/length eq.	
Chemical	Average Invertebrate	RME Invertebrate	Average Intake	RME Intake
4,4'-DDT	1.24E-04	3.05E-04	1.60E-10	3.92E-10
Arsenic	5.23E+00	6.97E+00	6.72E-06	8.95E-06
Benzo(b)fluoranthene	1.40E-02	3.88E-02	1.80E-08	4.98E-08
Copper	2.44E+00	3.40E+00	3.14E-06	4.37E-06
Hexachlorobenzene	9.11E-03	9.57E-03	1.17E-08	1.23E-08
Mercury	7.04E-03	1.09E-02	9.04E-09	1.40E-08
Nickel	1.34E+01	1.79E+01	1.72E-05	2.31E-05
Zinc	2.05E+01	2.54E+01	2.64E-05	3.26E-05
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	1.40E-02	3.88E-02	1.80E-08	4.98E-08
TOTAL PAHs	1.40E-02	3.88E-02	1.80E-08	4.98E-08
TOTAL INTAKE				
INTAKE = Sediment Intake + Food Intake				
Chemical			TOTAL Average Intake	TOTAL RME Intake
4,4'-DDT			3.60E-10	8.82E-10

TABLE G-4
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
FIDDLER CRAB

Arsenic	1.42E-05	1.89E-05
Benzo(b)fluoranthene	2.92E-08	8.08E-08
Copper	1.36E-05	1.89E-05
Hexachlorobenzene	3.46E-08	3.63E-08
Mercury	3.16E-08	4.91E-08
Nickel	3.64E-05	4.87E-05
Zinc	7.27E-05	8.98E-05
LPAH	0.00E+00	0.00E+00
HPAH	2.92E-08	8.08E-08
TOTAL PAHs	2.92E-08	8.08E-08

TABLE G-5
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
SPOTTED SEATROUT

FOOD INGESTION				
INTAKE = (Cf * IR * Dff * AUF)/BW				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Cf	Fish concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	2.60E-02	same as black drum	
Dff	Dietary fraction of fish (unitless)	1.00E+00	TPWD website	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	1.00E+00	TPWD website	

Chemical	Average Fish	RME Fish	Average Intake	RME Intake
4,4'-DDT	9.02E-05	2.21E-04	2.35E-06	5.76E-06
Arsenic	9.42E-01	1.25E+00	2.45E-02	3.26E-02
Benzo(b)fluoranthene	5.74E-03	1.59E-02	1.49E-04	4.14E-04
Copper	8.14E+00	1.13E+01	2.12E-01	2.95E-01
Hexachlorobenzene	2.53E-02	2.66E-02	6.57E-04	6.90E-04
Mercury	5.68E-02	8.82E-02	1.48E-03	2.29E-03
Nickel	8.05E-01	1.08E+00	2.09E-02	2.80E-02
Zinc	4.11E+01	5.08E+01	1.07E+00	1.32E+00
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	5.74E-03	1.59E-02	1.49E-04	4.14E-04
TOTAL PAHs	5.74E-03	1.59E-02	1.49E-04	4.14E-04

TABLE G-6
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
BLACK DRUM

SEDIMENT INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition		Value	Reference				
Intake	Intake of chemical (mg/kg-day)		calculated					
Sc	Sed concentration (mg/kg)		see data page					
IR	Ingestion rate of sed (kg/day)		2.60E-03	Neill, 1998*				
AF	Chemical Bioavailability in sediment (unitless)		1	EPA, 1997				
AUF	Area Use Factor		1	EPA, 1997				
BW	Body weight (kg)		1.24E+00	PCO BERA				
Chemical	Average Sc	RME Sc	Average Intake	RME Intake				
4,4'-DDT	1.56E-04	3.82E-04	3.27E-07	8.02E-07				
Arsenic	5.81E+00	7.74E+00	1.22E-02	1.63E-02				
Benzo(b)fluoranthene	8.70E-03	2.41E-02	1.83E-05	5.06E-05				
Copper	8.14E+00	1.13E+01	1.71E-02	2.38E-02				
Hexachlorobenzene	1.78E-02	1.87E-02	3.74E-05	3.93E-05				
Mercury	1.76E-02	2.73E-02	3.70E-05	5.73E-05				
Nickel	1.49E+01	1.99E+01	3.13E-02	4.19E-02				
Zinc	3.60E+01	4.45E+01	7.57E-02	9.35E-02				
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
HPAH	8.70E-03	2.41E-02	1.83E-05	5.06E-05				
TOTAL PAHs	8.70E-03	2.41E-02	1.83E-05	5.06E-05				
FOOD INGESTION								
INTAKE = ((Cw * IR * Dfw * AUF)/(BW) + (Cc * IR * Dfc * AUF) / (BW) + ((Cf * IR * Dff * AUF)/(BW))								
Parameter	Definition		Value	Reference				
Intake	Intake of chemical (mg/kg-day)		calculated					
Cw	Worm concentration (mg/kg)		see FoodConc page					
Cc	Crab concentration (mg/kg)		see FoodConc page					
Cf	Fish concentration (mg/kg)		see FoodConc page					
IR	Ingestion rate of food (kg/day)		2.60E-02	Neill, 1998				
Dfw	Dietary fraction of worms (unitless)		3.33E-01	prof. judgement				
Dfc	Dietary fraction of crabs (unitless)		3.33E-01	prof. judgement				
Dff	Dietary fraction of fish (unitless)		3.33E-01	prof. judgement				
AUF	Area Use Factor		1	EPA, 1997				
BW	Body weight (kg)		1.24E+00	PCO BERA				
Chemical	Average Worm	RME Worm	Average Crab	RME Crab	Average Fish	RME Fish	Average Intake	RME Intake
4,4'-DDT	1.24E-04	3.05E-04	6.25E-04	1.53E-03	9.02E-05	2.21E-04	5.87E-06	1.44E-05
Arsenic	5.23E+00	6.97E+00	0.00E+00	0.00E+00	9.42E-01	1.25E+00	4.32E-02	5.75E-02
Benzo(b)fluoranthene	1.40E-02	3.88E-02	1.37E-02	3.78E-02	5.74E-03	1.59E-02	2.34E-04	6.47E-04
Copper	2.44E+00	3.40E+00	0.00E+00	0.00E+00	8.14E+00	1.13E+01	7.40E-02	1.03E-01
Hexachlorobenzene	9.11E-03	9.57E-03	8.90E-02	9.35E-02	2.53E-02	2.66E-02	8.63E-04	9.07E-04
Mercury	7.04E-03	1.09E-02	0.00E+00	0.00E+00	5.68E-02	8.82E-02	4.47E-04	6.93E-04
Nickel	1.34E+01	1.79E+01	0.00E+00	0.00E+00	8.05E-01	1.08E+00	9.95E-02	1.33E-01
Zinc	2.05E+01	2.54E+01	0.00E+00	0.00E+00	4.11E+01	5.08E+01	4.31E-01	5.32E-01
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	1.40E-02	3.88E-02	2.84E-02	7.88E-02	5.74E-03	1.59E-02	3.37E-04	9.34E-04
TOTAL PAHs	1.40E-02	3.88E-02	2.84E-02	7.88E-02	5.74E-03	1.59E-02	3.37E-04	9.34E-04
TOTAL INTAKE								
INTAKE = Sediment Intake + Food Intake								
							TOTAL Average Intake	TOTAL RME Intake
Chemical								
4,4'-DDT							6.20E-06	1.52E-05
Arsenic							5.54E-02	7.37E-02
Benzo(b)fluoranthene							2.52E-04	6.98E-04
Copper							9.11E-02	1.27E-01
Hexachlorobenzene							9.00E-04	9.46E-04
Mercury							4.84E-04	7.50E-04
Nickel							1.31E-01	1.75E-01
Zinc							5.07E-01	6.26E-01
LPAH							0.00E+00	0.00E+00
HPAH							3.55E-04	9.84E-04
TOTAL PAHs							3.55E-04	9.84E-04

Notes:

* Sediment ingestion was assumed to be 10% of dietary intake

TABLE G-7
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT – BACKGROUND
SANDPIPER

SEDIMENT INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Sc	Sediment concentration (mg/kg)	see data page				
IR	Ingestion rate of sed (kg/day)	2.10E-02		EPA, 1993		
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
4,4'-DDT	1.56E-04	3.82E-04	1.52E-05	3.73E-05		
Arsenic	5.81E+00	7.74E+00	5.68E-01	7.56E-01		
Benzo(b)fluoranthene	8.70E-03	2.41E-02	8.50E-04	2.35E-03		
Copper	8.14E+00	1.13E+01	7.95E-01	1.11E+00		
Hexachlorobenzene	1.78E-02	1.87E-02	1.74E-03	1.83E-03		
Mercury	1.76E-02	2.73E-02	1.72E-03	2.67E-03		
Nickel	1.49E+01	1.99E+01	1.46E+00	1.95E+00		
Zinc	3.60E+01	4.45E+01	3.52E+00	4.35E+00		
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
HPAH	8.70E-03	2.41E-02	8.50E-04	2.35E-03		
TOTAL PAHs	8.70E-03	2.41E-02	8.50E-04	2.35E-03		
FOOD INGESTION						
INTAKE = ((Cc * IR * Dfc * AUF)/(BW) + (Cw * IR * DFwa * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cc	Crab concentration (mg/kg)	see FoodConc page				
Cw	Worm concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.08E-01		EPA, 1993		
Dfc	Dietary fraction of crabs (unitless)	4.00E-01		prof. judgement		
Dfw	Dietary fraction of worms (unitless)	6.00E-01		prof. judgement		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Crab	RME Crab	Average Worm	RME Worm	Average Intake	RME Intake
4,4'-DDT	6.25E-04	1.53E-03	1.24E-04	3.05E-04	1.63E-04	4.00E-04
Arsenic	0.00E+00	0.00E+00	5.23E+00	6.97E+00	1.58E+00	2.10E+00
Benzo(b)fluoranthene	1.37E-02	3.78E-02	1.40E-02	3.88E-02	6.97E-03	1.93E-02
Copper	0.00E+00	0.00E+00	2.44E+00	3.40E+00	7.36E-01	1.03E+00
Hexachlorobenzene	8.90E-02	9.35E-02	9.11E-03	9.57E-03	2.06E-02	2.17E-02
Mercury	0.00E+00	0.00E+00	7.04E-03	1.09E-02	2.12E-03	3.29E-03
Nickel	0.00E+00	0.00E+00	1.34E+01	1.79E+01	4.04E+00	5.41E+00
Zinc	0.00E+00	0.00E+00	2.05E+01	2.54E+01	6.19E+00	7.65E+00
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	2.84E-02	7.88E-02	1.40E-02	3.88E-02	9.94E-03	2.75E-02
TOTAL PAHs	2.84E-02	7.88E-02	1.40E-02	3.88E-02	9.94E-03	2.75E-02
TOTAL INTAKE						
INTAKE = Sediment Intake + Food Intake						
					TOTAL Average Intake	TOTAL RME Intake
Chemical						
4,4'-DDT					1.78E-04	4.38E-04
Arsenic					2.14E+00	2.86E+00
Benzo(b)fluoranthene					7.82E-03	2.17E-02
Copper					1.53E+00	2.13E+00
Hexachlorobenzene					2.24E-02	2.35E-02
Mercury					3.84E-03	5.96E-03
Nickel					5.50E+00	7.36E+00
Zinc					9.71E+00	1.20E+01
LPAH					0.00E+00	0.00E+00
HPAH					1.08E-02	2.99E-02
TOTAL PAHs					1.08E-02	2.99E-02

TABLE G-8
INTAKE CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
GREEN HERON

FOOD INGESTION						
$\text{INTAKE} = ((C_f * IR * D_{ff} * AUF) / (BW)) + (C_c * IR * D_{fc} * AUF) / (BW)$						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
C _f	Fish concentration (mg/kg)	see FoodConc page				
C _c	Crab concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.13E-01			EPA, 1993	
D _{ff}	Dietary fraction of fish (unitless)	7.50E-01			Kent, 1986	
D _{fc}	Dietary fraction of crab (unitless)	2.50E-01			Kent, 1986	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	3.75E-01			Dunning, 1993	

Chemical	Average Fish	RME Fish	Average Crab	RME Crab	Average Intake	RME Intake
4,4'-DDT	9.02E-05	2.21E-04	6.25E-04	1.53E-03	6.72E-05	1.65E-04
Arsenic	9.42E-01	1.25E+00	0.00E+00	0.00E+00	2.12E-01	2.82E-01
Benzo(b)fluoranthene	5.74E-03	1.59E-02	1.37E-02	3.78E-02	2.32E-03	6.42E-03
Copper	8.14E+00	1.13E+01	0.00E+00	0.00E+00	1.83E+00	2.55E+00
Hexachlorobenzene	2.53E-02	2.66E-02	8.90E-02	9.35E-02	1.24E-02	1.30E-02
Mercury	5.68E-02	8.82E-02	0.00E+00	0.00E+00	1.28E-02	1.98E-02
Nickel	8.05E-01	1.08E+00	0.00E+00	0.00E+00	1.81E-01	2.42E-01
Zinc	4.11E+01	5.08E+01	0.00E+00	0.00E+00	9.24E+00	1.14E+01
LPAH	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
HPAH	5.74E-03	1.59E-02	2.84E-02	7.88E-02	3.43E-03	9.49E-03
TOTAL PAHs	5.74E-03	1.59E-02	2.84E-02	7.88E-02	3.43E-03	9.49E-03

TABLE G-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
FIDDLER CRAB

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Fiddler Crab	Average EHQ	RME EHQ
4,4'-DDT	3.60E-10	8.82E-10	1.47E-01	2.45E-09	6.00E-09
Arsenic	1.42E-05	1.89E-05			
Benzo(b)fluoranthene	2.92E-08	8.08E-08			
Copper	1.36E-05	1.89E-05	5.60E+00	2.43E-06	3.38E-06
Hexachlorobenzene	3.46E-08	3.63E-08	2.25E-01	1.54E-07	1.61E-07
Mercury	3.16E-08	4.91E-08	1.01E+00	3.13E-08	4.86E-08
Nickel	3.64E-05	4.87E-05	1.70E+00	2.14E-05	2.86E-05
Zinc	7.27E-05	8.98E-05	7.54E+01	9.64E-07	1.19E-06
LPAH			6.56E+01		
HPAH	2.92E-08	8.08E-08	9.31E+00	3.13E-09	8.68E-09
TOTAL PAHs	2.92E-08	8.08E-08			

TABLE G-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
BLACK DRUM

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Black Drum	Average EHQ	RME EHQ
4,4'-DDT	6.20E-06	1.52E-05	1.47E-01	4.22E-05	1.04E-04
Arsenic	5.54E-02	7.37E-02			
Benzo(b)fluoranthene	2.52E-04	6.98E-04			
Copper	9.11E-02	1.27E-01	5.60E+00	1.63E-02	2.27E-02
Hexachlorobenzene	9.00E-04	9.46E-04	2.25E-01	4.00E-03	4.20E-03
Mercury	4.84E-04	7.50E-04	1.01E+00	4.79E-04	7.43E-04
Nickel	1.31E-01	1.75E-01	1.70E+00	7.69E-02	1.03E-01
Zinc	5.07E-01	6.26E-01	7.54E+01	6.72E-03	8.30E-03
LPAH			6.56E+01		
HPAH	3.55E-04	9.84E-04	9.31E+00	3.82E-05	1.06E-04
TOTAL PAHs	3.55E-04	9.84E-04			

TABLE G-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
SPOTTED SEATROUT

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Spotted Seatrout	Average EHQ	RME EHQ
4,4'-DDT	2.35E-06	5.76E-06	1.47E-01	1.60E-05	3.92E-05
Arsenic	2.45E-02	3.26E-02			
Benzo(b)fluoranthene	1.49E-04	4.14E-04			
Copper	2.12E-01	2.95E-01	5.60E+00	3.78E-02	5.27E-02
Hexachlorobenzene	6.57E-04	6.90E-04	2.25E-01	2.92E-03	3.07E-03
Mercury	1.48E-03	2.29E-03	1.01E+00	1.46E-03	2.27E-03
Nickel	2.09E-02	2.80E-02	1.70E+00	1.23E-02	1.65E-02
Zinc	1.07E+00	1.32E+00	7.54E+01	1.42E-02	1.75E-02
LPAH			6.56E+01		
HPAH	1.49E-04	4.14E-04	9.31E+00	1.60E-05	4.44E-05
TOTAL PAHs	1.49E-04	4.14E-04			

TABLE G-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
SANDPIPER

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Sandpiper	Average EHQ	RME EHQ
4,4'-DDT	1.78E-04	4.38E-04	2.27E-01	7.86E-04	1.93E-03
Arsenic	2.14E+00	2.86E+00	0.00E+00		
Benzo(b)fluoranthene	7.82E-03	2.17E-02	0.00E+00		
Copper	1.53E+00	2.13E+00	4.05E+00	3.78E-01	5.27E-01
Hexachlorobenzene	2.24E-02	2.35E-02	2.25E-01	9.94E-02	1.04E-01
Mercury	3.84E-03	5.96E-03	3.25E+00	1.18E-03	1.83E-03
Nickel	5.50E+00	7.36E+00	6.71E+00	8.20E-01	1.10E+00
Zinc	9.71E+00	1.20E+01	6.61E+01	1.47E-01	1.81E-01
LPAH			6.56E+01		
HPAH	1.08E-02	2.99E-02	9.31E+00	1.16E-03	3.21E-03
TOTAL PAHs	1.08E-02	2.99E-02	0.00E+00		

TABLE G-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR INTRACOASTAL WATERWAY SEDIMENT -- BACKGROUND
GREEN HERON

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Green Heron	Average EHQ	RME EHQ
4,4'-DDT	6.72E-05	1.65E-04	2.27E-01	2.96E-04	7.26E-04
Arsenic	2.12E-01	2.82E-01			
Benzo(b)fluoranthene	2.32E-03	6.42E-03			
Copper	1.83E+00	2.55E+00	4.05E+00	4.52E-01	6.30E-01
Hexachlorobenzene	1.24E-02	1.30E-02	2.25E-01	5.49E-02	5.77E-02
Mercury	1.28E-02	1.98E-02	3.25E+00	3.94E-03	6.10E-03
Nickel	1.81E-01	2.42E-01	6.71E+00	2.70E-02	3.61E-02
Zinc	9.24E+00	1.14E+01	6.61E+01	1.40E-01	1.73E-01
LPAH			6.56E+01		
HPAH	3.43E-03	9.49E-03	9.31E+00	3.68E-04	1.02E-03
TOTAL PAHs	3.43E-03	9.49E-03	0.00E+00		

TABLE G-14
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg) -- BACKGROUND SEDIMENT

Cfood = Csed x BSAF (or BSAFor BCF with food chain multiplier)										
where:										
Cfood = Chemical Concentration in food (mg/kg dry)										
Csed = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	Average Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDT	1.56E-04	8.00E-01	1.24E-04	BSAF DB	4.02E+00	6.25E-04	BSAF DB	5.80E-01	9.02E-05	WSDOH, 1995
Arsenic	5.81E+00	9.00E-01	5.23E+00	EPA, 1999		0.00E+00		1.62E-01	9.42E-01	EPA, 2000
Benzo(b)fluoranthene	8.70E-03	1.61E+00	1.40E-02	EPA, 1999	1.57E+00	1.37E-02	BSAF DB	6.60E-01	5.74E-03	WSDOH, 1995
Copper	8.14E+00	3.00E-01	2.44E+00	EPA, 1999		0.00E+00		1.00E+00	8.14E+00	Max value from Calcasieu RI
Hexachlorobenzene	1.78E-02	5.12E-01	9.11E-03	BSAF DB	5.00E+00	8.90E-02	BSAF DB	1.42E+00	2.53E-02	Max value from Calcasieu RI
Mercury	1.76E-02	4.00E-01	7.04E-03	EPA, 1999		0.00E+00		3.23E+00	5.68E-02	Max value from Calcasieu RI
Nickel	1.49E+01	9.00E-01	1.34E+01	EPA, 1999		0.00E+00		5.40E-02	8.05E-01	Max value from Calcasieu RI
Zinc	3.60E+01	5.70E-01	2.05E+01	EPA, 1999		0.00E+00		1.14E+00	4.11E+01	Max value from Calcasieu RI
LPAH	0.00E+00	1.61E+00	0.00E+00	EPA, 1999	3.27E+00	0.00E+00	max PAH	4.96E-01	0.00E+00	WSDOH, 1995
HPAH	8.70E-03	1.61E+00	1.40E-02	EPA, 1999	3.27E+00	2.84E-02	max PAH	6.60E-01	5.74E-03	WSDOH, 1995
TOTAL PAHs	8.70E-03	1.61E+00	1.40E-02	EPA, 1999	3.27E+00	2.84E-02	max PAH	6.60E-01	5.74E-03	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE G-15
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg) -- BACKGROUND SEDIMENT

Cfood = Csed x BSAF (or BSAFor BCF with food chain multiplier)										
where:										
Cfood = Chemical Concentration in food (mg/kg dry)										
Csed = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	RME Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDT	3.82E-04	8.00E-01	3.05E-04	BSAF DB	4.02E+00	1.53E-03	BSAF DB	5.80E-01	2.21E-04	WSDOH, 1995
Arsenic	7.74E+00	9.00E-01	6.97E+00	EPA, 1999		0.00E+00		1.62E-01	1.25E+00	EPA, 2000
Benzo(b)fluoranthene	2.41E-02	1.61E+00	3.88E-02	EPA, 1999	1.57E+00	3.78E-02	BSAF DB	6.60E-01	1.59E-02	WSDOH, 1995
Copper	1.13E+01	3.00E-01	3.40E+00	EPA, 1999		0.00E+00		1.00E+00	1.13E+01	Max value from Calcasieu RI
Hexachlorobenzene	1.87E-02	5.12E-01	9.57E-03	BSAF DB	5.00E+00	9.35E-02	BSAF DB	1.42E+00	2.66E-02	Max value from Calcasieu RI
Mercury	2.73E-02	4.00E-01	1.09E-02	EPA, 1999		0.00E+00		3.23E+00	8.82E-02	Max value from Calcasieu RI
Nickel	1.99E+01	9.00E-01	1.79E+01	EPA, 1999		0.00E+00		5.40E-02	1.08E+00	Max value from Calcasieu RI
Zinc	4.45E+01	5.70E-01	2.54E+01	EPA, 1999		0.00E+00		1.14E+00	5.08E+01	Max value from Calcasieu RI
LPAH	0.00E+00	1.61E+00	0.00E+00	EPA, 1999	3.27E+00	0.00E+00	max PAH	4.96E-01	0.00E+00	WSDOH, 1995
HPAH	2.41E-02	1.61E+00	3.88E-02	EPA, 1999	3.27E+00	7.88E-02	max PAH	6.60E-01	1.59E-02	WSDOH, 1995
TOTAL PAHs	2.41E-02	1.61E+00	3.88E-02	EPA, 1999	3.27E+00	7.88E-02	max PAH	6.60E-01	1.59E-02	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE H-1
EXPOSURE POINT CONCENTRATION (mg/kg)
SEDIMENT NORTH OF MARLIN

Parameter	Average		95% UCL	Statistic Used
2-Methylnaphthalene	0.0246		0.116	99% Chebyshev
4,4'-DDT	9.52E-04		0.0022	97.5% Chebyshev
Acenaphthene	0.0195		0.064	99% Chebyshev
Acenaphthylene	0.0314		0.165	99% Chebyshev
Anthracene	0.0288		0.126	99% Chebyshev
Benzo(a)anthracene	0.0543		0.306	99% Chebyshev
Benzo(a)pyrene	0.104		0.476	99% Chebyshev
Benzo(b)fluoranthene	0.0902		0.431	99% Chebyshev
Benzo(g,h,i)perylene	0.198		0.755	99% Chebyshev
Benzo(k)fluoranthene	0.0659		0.237	99% Chebyshev
Cadmium	0.103		0.313	99% Chebyshev
Chrysene	0.217		1.24	99% Chebyshev
Dibenz(a,h)anthracene	0.203		1.1	99% Chebyshev
Endosulfan Sulfate	0.0018		0.00144	97.5% Chebyshev
Endrin Aldehyde	0.001		0.0043	97.5% Chebyshev
Endrin Ketone	7.85E-04		0.002	95% Chebyshev
Fluoranthene	0.108		0.637	99% Chebyshev
Fluorene	0.0186		0.0637	99% Chebyshev
gamma-Chlordane	4.05E-04		8.27E-04	95% Chebyshev
Indeno(1,2,3-cd)pyrene	0.201		0.785	99% Chebyshev
Nickel	17.3		18.1	95% Student's-t
Phenanthrene	0.0761		0.432	99% Chebyshev
Pyrene	0.154		0.663	99% Chebyshev
LPAH	0.199		0.9667	
HPAH	1.3954		6.63	
TOTAL PAHs	1.5944		7.5967	

TABLE H-2
TOXICITY REFERENCE VALUES

Parameter	Capitella capitata (mg/kg)	Ref.	Comments	Capitella capitata (mg/kg)	Ref.	Comments	Fiddler Crab (mg/kgBW-day)	Ref.	Comments	Black Drum (mg/kgBW-day)	Ref.	Comments	Spotted seatrout (mg/kgBW-day)	Ref.	Comments	Sandpiper (mg/kgBW-day)	Ref.	Comments	Green heron (mg/kgBW-day)	Ref.	Comments
2-Methylnaphthalene	0.07	SQUIRT	ERL	0.67	SQUIRT	ERM															
4,4'-DDT	0.001	SQUIRT	ERL	0.007	SQUIRT	ERM	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Acenaphthene	0.016	SQUIRT	ERL	0.5	SQUIRT	ERM															
Acenaphthylene	0.044	SQUIRT	ERL	0.64	SQUIRT	ERM															
Anthracene	0.0853	SQUIRT	ERL	1.1	SQUIRT	ERM															
Benzo(a)anthracene	0.261	SQUIRT	ERL	1.6	SQUIRT	ERM															
Benzo(a)pyrene	0.43	SQUIRT	ERL	1.6	SQUIRT	ERM															
Benzo(b)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
Benzo(g,h,i)perylene	0.67	SQUIRT	AET	0.67	SQUIRT	AET															
Benzo(k)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
																		Geometric mean of NOAEL values for reproduction and growth			Geometric mean of NOAEL values for reproduction and growth
Cadmium	1.2	SQUIRT	ERL	9.6	SQUIRT	ERM	0.77	EPA, 2005b	mammalian TRV for soil	0.77	EPA, 2005b	mammalian TRV for soil	0.77	EPA, 2005b	mammalian TRV for soil	1.47	EPA, 1999		1.47	EPA, 1999	
Chrysene	0.384	SQUIRT	ERL	2.8	SQUIRT	ERM															
Dibenz(a,h)anthracene	0.0634	SQUIRT	ERL	0.26	SQUIRT	ERM															
Endosulfan Sulfate																					
Endrin Aldehyde	0.00267	SQUIRT	TEL for freshwater sediment	0.0624	SQUIRT	PEL for freshwater sediment	0.092	Sample, 1996	mammalian TRV for soil	0.092	Sample, 1996	mammalian TRV for soil	0.092	Sample, 1996	mammalian TRV for soil	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1
Endrin Ketone	0.00267	SQUIRT	TEL for freshwater sediment	0.0624	SQUIRT	PEL for freshwater sediment	0.092	Sample, 1996	mammalian TRV for soil	0.092	Sample, 1996	mammalian TRV for soil	0.092	Sample, 1996	mammalian TRV for soil	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1	0.01	Sample, 1996	Chronic LOAEL in screech owl with an uncertainty factor of 0.1
Fluoranthene	0.6	SQUIRT	ERL	5.1	SQUIRT	ERM															
Fluorene	0.019	SQUIRT	ERL	0.54	SQUIRT	ERM															
gamma-Chlordane	5.00E-04	SQUIRT	ERL	0.006	SQUIRT	ERM	4.6	Sample, 1996	mammalian TRV for soil	4.6	Sample, 1996	mammalian TRV for soil	4.6	Sample, 1996	mammalian TRV for soil	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird	2.14	Sample, 1996	Chronic NOAEL in red-winged blackbird
Indeno(1,2,3-cd)pyrene	0.6	SQUIRT	AET	0.6	SQUIRT	AET															
																		Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival			Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Nickel	20.9	SQUIRT	ERL	51.6	SQUIRT	ERM	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	6.71	EPA, 2007d		6.71	EPA, 2007d	
Phenanthrene	0.24	SQUIRT	ERL	1.5	SQUIRT	ERM															
Pyrene	0.665	SQUIRT	ERL	2.6	SQUIRT	ERM															
LPAH	0.552	SQUIRT	ERL	3.162	SQUIRT	ERM	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil
HPAH	1.7	SQUIRT	ERL	9.6	SQUIRT	ERM	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV
TOTAL PAHs	4.022	SQUIRT	ERL	44.792	SQUIRT	ERM															

Notes:
ERL -- Effects Range-Low
AET -- Apparent Effects Threshold
TEL -- Threshold Effects Level

EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007d -- Nickel
EPA, 2005b -- Cadmium

TABLE H-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
CAPITELLA CAPITATA

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
2-Methylnaphthalene	2.46E-02	1.16E-01	7.00E-02	3.51E-01	1.66E+00
4,4'-DDT	9.52E-04	2.20E-03	1.00E-03	9.52E-01	2.20E+00
Acenaphthene	1.95E-02	6.40E-02	1.60E-02	1.22E+00	4.00E+00
Acenaphthylene	3.14E-02	1.65E-01	4.40E-02	7.14E-01	3.75E+00
Anthracene	2.88E-02	1.26E-01	8.53E-02	3.38E-01	1.48E+00
Benzo(a)anthracene	5.43E-02	3.06E-01	2.61E-01	2.08E-01	1.17E+00
Benzo(a)pyrene	1.04E-01	4.76E-01	4.30E-01	2.42E-01	1.11E+00
Benzo(b)fluoranthene	9.02E-02	4.31E-01	1.80E+00	5.01E-02	2.39E-01
Benzo(g,h,i)perylene	1.98E-01	7.55E-01	6.70E-01	2.96E-01	1.13E+00
Benzo(k)fluoranthene	6.59E-02	2.37E-01	1.80E+00	3.66E-02	1.32E-01
Cadmium	1.03E-01	3.13E-01	1.20E+00	8.58E-02	2.61E-01
Chrysene	2.17E-01	1.24E+00	3.84E-01	5.65E-01	3.23E+00
Dibenz(a,h)anthracene	2.03E-01	1.10E+00	6.34E-02	3.20E+00	1.74E+01
Endosulfan Sulfate	1.80E-03	1.44E-03			
Endrin Aldehyde	1.00E-03	4.30E-03	2.67E-03	3.75E-01	1.61E+00
Endrin Ketone	7.85E-04	2.00E-03	2.67E-03	2.94E-01	7.49E-01
Fluoranthene	1.08E-01	6.37E-01	6.00E-01	1.80E-01	1.06E+00
Fluorene	1.86E-02	6.37E-02	1.90E-02	9.79E-01	3.35E+00
gamma-Chlordane	4.05E-04	8.27E-04	5.00E-04	8.10E-01	1.65E+00
Indeno(1,2,3-cd)pyrene	2.01E-01	7.85E-01	6.00E-01	3.35E-01	1.31E+00
Nickel	1.73E+01	1.81E+01	2.09E+01	8.28E-01	8.66E-01
Phenanthrene	7.61E-02	4.32E-01	2.40E-01	3.17E-01	1.80E+00
Pyrene	1.54E-01	6.63E-01	6.65E-01	2.32E-01	9.97E-01
LPAH	1.99E-01	9.67E-01	5.52E-01	3.61E-01	1.75E+00
HPAH	1.40E+00	6.63E+00	1.70E+00	8.21E-01	3.90E+00
TOTAL PAHs	1.59E+00	7.60E+00	4.02E+00	3.96E-01	1.89E+00

TABLE H-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
CAPITELLA CAPITATA -- MIDPOINT BETWEEN ERL AND ERM COMPARISON

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
2-Methylnaphthalene	2.46E-02	1.16E-01	3.70E-01	6.65E-02	3.14E-01
4,4'-DDT	9.52E-04	2.20E-03	4.00E-03	2.38E-01	5.50E-01
Acenaphthene	1.95E-02	6.40E-02	2.58E-01	7.56E-02	2.48E-01
Acenaphthylene	3.14E-02	1.65E-01	3.42E-01	9.18E-02	4.82E-01
Anthracene	2.88E-02	1.26E-01	5.93E-01	4.86E-02	2.13E-01
Benzo(a)anthracene	5.43E-02	3.06E-01	9.31E-01	5.84E-02	3.29E-01
Benzo(a)pyrene	1.04E-01	4.76E-01	1.02E+00	1.02E-01	4.69E-01
Benzo(b)fluoranthene	9.02E-02	4.31E-01	1.80E+00	5.01E-02	2.39E-01
Benzo(g,h,i)perylene	1.98E-01	7.55E-01	6.70E-01	2.96E-01	1.13E+00
Benzo(k)fluoranthene	6.59E-02	2.37E-01	1.80E+00	3.66E-02	1.32E-01
Cadmium	1.03E-01	3.13E-01	5.40E+00	1.91E-02	5.80E-02
Chrysene	2.17E-01	1.24E+00	1.59E+00	1.36E-01	7.79E-01
Dibenz(a,h)anthracene	2.03E-01	1.10E+00	1.62E-01	1.26E+00	6.80E+00
Endosulfan Sulfate	1.80E-03	1.44E-03			
Endrin Aldehyde	1.00E-03	4.30E-03	3.25E-02	3.07E-02	1.32E-01
Endrin Ketone	7.85E-04	2.00E-03	3.25E-02	2.41E-02	6.15E-02
Fluoranthene	1.08E-01	6.37E-01	2.85E+00	3.79E-02	2.24E-01
Fluorene	1.86E-02	6.37E-02	2.80E-01	6.65E-02	2.28E-01
gamma-Chlordane	4.05E-04	8.27E-04	3.25E-03	1.25E-01	2.54E-01
Indeno(1,2,3-cd)pyrene	2.01E-01	7.85E-01	6.00E-01	3.35E-01	1.31E+00
Nickel	1.73E+01	1.81E+01	3.63E+01	4.77E-01	4.99E-01
Phenanthrene	7.61E-02	4.32E-01	8.70E-01	8.75E-02	4.97E-01
Pyrene	1.54E-01	6.63E-01	1.63E+00	9.43E-02	4.06E-01
LPAH	1.99E-01	9.67E-01	1.86E+00	1.07E-01	5.21E-01
HPAH	1.40E+00	6.63E+00	5.65E+00	2.47E-01	1.17E+00
TOTAL PAHs	1.59E+00	7.60E+00	2.44E+01	6.53E-02	3.11E-01

TABLE H-5
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
CAPITELLA CAPITATA -- ERM COMPARISON

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
2-Methylnaphthalene	2.46E-02	1.16E-01	6.70E-01	3.67E-02	1.73E-01
4,4'-DDT	9.52E-04	2.20E-03	7.00E-03	1.36E-01	3.14E-01
Acenaphthene	1.95E-02	6.40E-02	5.00E-01	3.90E-02	1.28E-01
Acenaphthylene	3.14E-02	1.65E-01	6.40E-01	4.91E-02	2.58E-01
Anthracene	2.88E-02	1.26E-01	1.10E+00	2.62E-02	1.15E-01
Benzo(a)anthracene	5.43E-02	3.06E-01	1.60E+00	3.39E-02	1.91E-01
Benzo(a)pyrene	1.04E-01	4.76E-01	1.60E+00	6.50E-02	2.98E-01
Benzo(b)fluoranthene	9.02E-02	4.31E-01	1.80E+00	5.01E-02	2.39E-01
Benzo(g,h,i)perylene	1.98E-01	7.55E-01	6.70E-01	2.96E-01	1.13E+00
Benzo(k)fluoranthene	6.59E-02	2.37E-01	1.80E+00	3.66E-02	1.32E-01
Cadmium	1.03E-01	3.13E-01	9.60E+00	1.07E-02	3.26E-02
Chrysene	2.17E-01	1.24E+00	2.80E+00	7.75E-02	4.43E-01
Dibenz(a,h)anthracene	2.03E-01	1.10E+00	2.60E-01	7.81E-01	4.23E+00
Endosulfan Sulfate	1.80E-03	1.44E-03	0.00E+00		
Endrin Aldehyde	1.00E-03	4.30E-03	6.24E-02	1.60E-02	6.89E-02
Endrin Ketone	7.85E-04	2.00E-03	6.24E-02	1.26E-02	3.21E-02
Fluoranthene	1.08E-01	6.37E-01	5.10E+00	2.12E-02	1.25E-01
Fluorene	1.86E-02	6.37E-02	5.40E-01	3.44E-02	1.18E-01
gamma-Chlordane	4.05E-04	8.27E-04	6.00E-03	6.75E-02	1.38E-01
Indeno(1,2,3-cd)pyrene	2.01E-01	7.85E-01	6.00E-01	3.35E-01	1.31E+00
Nickel	1.73E+01	1.81E+01	5.16E+01	3.35E-01	3.51E-01
Phenanthrene	7.61E-02	4.32E-01	1.50E+00	5.07E-02	2.88E-01
Pyrene	1.54E-01	6.63E-01	2.60E+00	5.92E-02	2.55E-01
LPAH	1.99E-01	9.67E-01	3.16E+00	6.29E-02	3.06E-01
HPAH	1.40E+00	6.63E+00	9.60E+00	1.45E-01	6.91E-01
TOTAL PAHs	1.59E+00	7.60E+00	4.48E+01	3.56E-02	1.70E-01

TABLE H-6
INTAKE CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
FIDDLER CRAB

SEDIMENT INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Sed concentration (mg/kg)	see data page		
IR	Ingestion rate of sed (kg/day)	1.16E-05	Cammen, 1979	
AF	Chemical Bioavailability in sediment (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
2-Methylnaphthalene	2.46E-02	1.16E-01	3.16E-05	1.49E-04
4,4'-DDT	9.52E-04	2.20E-03	1.22E-06	2.83E-06
Acenaphthene	1.95E-02	6.40E-02	2.50E-05	8.22E-05
Acenaphthylene	3.14E-02	1.65E-01	4.03E-05	2.12E-04
Aluminum	1.32E+04	1.40E+04	1.70E+01	1.79E+01
Anthracene	2.88E-02	1.26E-01	3.70E-05	1.62E-04
Benzo(a)anthracene	5.43E-02	3.06E-01	6.97E-05	3.93E-04
Benzo(a)pyrene	1.04E-01	4.76E-01	1.34E-04	6.11E-04
Benzo(b)fluoranthene	9.02E-02	4.31E-01	1.16E-04	5.54E-04
Benzo(g,h,i)perylene	1.98E-01	7.55E-01	2.54E-04	9.70E-04
Benzo(k)fluoranthene	6.59E-02	2.37E-01	8.46E-05	3.04E-04
Cadmium	1.03E-01	3.13E-01	1.32E-04	4.02E-04
Chrysene	2.17E-01	1.24E+00	2.79E-04	1.59E-03
Dibenz(a,h)anthracene	2.03E-01	1.10E+00	2.61E-04	1.41E-03
Endosulfan Sulfate	1.80E-03	1.44E-03	2.31E-06	1.85E-06
Endrin Aldehyde	1.00E-03	4.30E-03	1.28E-06	5.52E-06
Endrin Ketone	7.85E-04	2.00E-03	1.01E-06	2.57E-06
Fluoranthene	1.08E-01	6.37E-01	1.39E-04	8.18E-04
Fluorene	1.86E-02	6.37E-02	2.39E-05	8.18E-05
gamma-Chlordane	4.05E-04	8.27E-04	5.20E-07	1.06E-06
Indeno(1,2,3-cd)pyrene	2.01E-01	7.85E-01	2.58E-04	1.01E-03
Nickel	1.73E+01	1.81E+01	2.22E-02	2.32E-02
Phenanthrene	7.61E-02	4.32E-01	9.77E-05	5.55E-04
Pyrene	1.54E-01	6.63E-01	1.98E-04	8.52E-04
LPAH	1.99E-01	9.67E-01	2.56E-04	1.24E-03
HPAH	1.40E+00	6.63E+00	1.79E-03	8.52E-03
TOTAL PAHs	1.59E+00	7.60E+00	2.05E-03	9.76E-03
FOOD INGESTION				
INTAKE = (Ci * IR * Dfi * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ci	Invertebrate concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	1.16E-05	Cammen, 1979	
Dfi	Dietary fraction of invertebrates (unitless)	1.00E+00	TPWD website	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Invertebrate	RME Invertebrate	Average Intake	RME Intake
2-Methylnaphthalene	3.96E-02	1.87E-01	5.09E-05	2.40E-04
4,4'-DDT	7.62E-04	1.76E-03	9.78E-07	2.26E-06
Acenaphthene	3.14E-02	1.03E-01	4.03E-05	1.32E-04
Acenaphthylene	5.06E-02	2.66E-01	6.49E-05	3.41E-04
Anthracene	4.64E-02	2.03E-01	5.96E-05	2.61E-04

TABLE H-6
INTAKE CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
FIDDLER CRAB

Benzo(a)anthracene	7.87E-02	4.44E-01	1.01E-04	5.70E-04
Benzo(a)pyrene	1.65E-01	7.57E-01	2.12E-04	9.72E-04
Benzo(b)fluoranthene	1.45E-01	6.94E-01	1.87E-04	8.91E-04
Benzo(g,h,i)perylene	3.19E-01	1.22E+00	4.09E-04	1.56E-03
Benzo(k)fluoranthene	1.06E-01	3.82E-01	1.36E-04	4.90E-04
Cadmium	3.50E-01	1.06E+00	4.50E-04	1.37E-03
Chrysene	2.99E-01	1.71E+00	3.85E-04	2.20E-03
Dibenz(a,h)anthracene	3.27E-01	1.77E+00	4.20E-04	2.27E-03
Endosulfan Sulfate	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin Aldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	1.74E-01	1.03E+00	2.23E-04	1.32E-03
Fluorene	2.99E-02	1.03E-01	3.85E-05	1.32E-04
gamma-Chlordane	2.38E-03	4.86E-03	3.06E-06	6.25E-06
Indeno(1,2,3-cd)pyrene	3.24E-01	1.26E+00	4.16E-04	1.62E-03
Nickel	1.56E+01	1.63E+01	2.00E-02	2.09E-02
Phenanthrene	1.23E-01	6.96E-01	1.57E-04	8.93E-04
Pyrene	2.48E-01	1.07E+00	3.18E-04	1.37E-03
LPAH	3.20E-01	1.56E+00	4.12E-04	2.00E-03
HPAH	2.25E+00	1.07E+01	2.89E-03	1.37E-02
TOTAL PAHs	2.57E+00	1.22E+01	3.30E-03	1.57E-02
TOTAL INTAKE				
INTAKE = Sediment Intake + Food Intake				
Chemical	TOTAL Average Intake		TOTAL RME Intake	
2-Methylnaphthalene	8.25E-05		3.89E-04	
4,4'-DDT	2.20E-06		5.09E-06	
Acenaphthene	6.54E-05		2.15E-04	
Acenaphthylene	1.05E-04		5.53E-04	
Anthracene	9.65E-05		4.22E-04	
Benzo(a)anthracene	1.71E-04		9.63E-04	
Benzo(a)pyrene	3.46E-04		1.58E-03	
Benzo(b)fluoranthene	3.02E-04		1.44E-03	
Benzo(g,h,i)perylene	6.64E-04		2.53E-03	
Benzo(k)fluoranthene	2.21E-04		7.95E-04	
Cadmium	5.82E-04		1.77E-03	
Chrysene	6.63E-04		3.79E-03	
Dibenz(a,h)anthracene	6.81E-04		3.69E-03	
Endosulfan Sulfate	2.31E-06		1.85E-06	
Endrin Aldehyde	1.28E-06		5.52E-06	
Endrin Ketone	1.01E-06		2.57E-06	
Fluoranthene	3.62E-04		2.14E-03	
Fluorene	6.24E-05		2.14E-04	
gamma-Chlordane	3.58E-06		7.31E-06	
Indeno(1,2,3-cd)pyrene	6.74E-04		2.63E-03	
Nickel	4.22E-02		4.42E-02	
Phenanthrene	2.55E-04		1.45E-03	
Pyrene	5.16E-04		2.22E-03	
LPAH	6.67E-04		3.24E-03	
HPAH	4.68E-03		2.22E-02	
TOTAL PAHs	5.35E-03		2.55E-02	

**TABLE H-7
INTAKE CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
SANDPIPER**

SEDIMENT INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Sc	Sediment concentration (mg/kg)	see data page				
IR	Ingestion rate of sed (kg/day)	2.10E-02		EPA, 1993		
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
2-Methylnaphthalene	2.46E-02	1.16E-01	2.40E-03	1.13E-02		
4,4'-DDT	9.52E-04	2.20E-03	9.30E-05	2.15E-04		
Acenaphthene	1.95E-02	6.40E-02	1.90E-03	6.25E-03		
Acenaphthylene	3.14E-02	1.65E-01	3.07E-03	1.61E-02		
Anthracene	2.88E-02	1.26E-01	2.81E-03	1.23E-02		
Benzo(a)anthracene	5.43E-02	3.06E-01	5.30E-03	2.99E-02		
Benzo(a)pyrene	1.04E-01	4.76E-01	1.02E-02	4.65E-02		
Benzo(b)fluoranthene	9.02E-02	4.31E-01	8.81E-03	4.21E-02		
Benzo(g,h,i)perylene	1.98E-01	7.55E-01	1.93E-02	7.37E-02		
Benzo(k)fluoranthene	6.59E-02	2.37E-01	6.44E-03	2.31E-02		
Cadmium	1.03E-01	3.13E-01	1.01E-02	3.06E-02		
Chrysene	2.17E-01	1.24E+00	2.12E-02	1.21E-01		
Dibenz(a,h)anthracene	2.03E-01	1.10E+00	1.98E-02	1.07E-01		
Endosulfan Sulfate	1.80E-03	1.44E-03	1.76E-04	1.41E-04		
Endrin Aldehyde	1.00E-03	4.30E-03	9.77E-05	4.20E-04		
Endrin Ketone	7.85E-04	2.00E-03	7.67E-05	1.95E-04		
Fluoranthene	1.08E-01	6.37E-01	1.05E-02	6.22E-02		
Fluorene	1.86E-02	6.37E-02	1.82E-03	6.22E-03		
gamma-Chlordane	4.05E-04	8.27E-04	3.96E-05	8.08E-05		
Indeno(1,2,3-cd)pyrene	2.01E-01	7.85E-01	1.96E-02	7.67E-02		
Nickel	1.73E+01	1.81E+01	1.69E+00	1.77E+00		
Phenanthrene	7.61E-02	4.32E-01	7.43E-03	4.22E-02		
Pyrene	1.54E-01	6.63E-01	1.50E-02	6.48E-02		
LPAH	1.99E-01	9.67E-01	1.94E-02	9.44E-02		
HPAH	1.40E+00	6.63E+00	1.36E-01	6.48E-01		
TOTAL PAHs	1.59E+00	7.60E+00	1.56E-01	7.42E-01		
FOOD INGESTION						
INTAKE = ((Cc * IR * Dfc * AUF)/(BW) + (Cw * IR * DFwa * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cc	Crab concentration (mg/kg)	see FoodConc page				
Cw	Worm concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.08E-01		EPA, 1993		
Dfc	Dietary fraction of crabs (unitless)	4.00E-01		prof. judgement		
DFw	Dietary fraction of worms (unitless)	6.00E-01		prof. judgement		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Crab	RME Crab	Average Worm	RME Worm	Average Intake	RME Intake
2-Methylnaphthalene	0.00E+00	0.00E+00	3.96E-02	1.87E-01	1.19E-02	5.63E-02
4,4'-DDT	3.83E-03	8.84E-03	7.62E-04	1.76E-03	9.99E-04	2.31E-03
Acenaphthene	0.00E+00	0.00E+00	5.06E-02	2.66E-01	1.52E-02	8.01E-02
Acenaphthylene	0.00E+00	0.00E+00	5.06E-02	2.66E-01	1.52E-02	8.01E-02
Anthracene	9.42E-02	4.12E-01	4.64E-02	2.03E-01	3.29E-02	1.44E-01
Benzo(a)anthracene	1.37E-01	7.74E-01	7.87E-02	4.44E-01	5.13E-02	2.89E-01
Benzo(a)pyrene	1.56E-02	7.14E-02	1.65E-01	7.57E-01	5.30E-02	2.42E-01
Benzo(b)fluoranthene	1.42E-01	6.77E-01	1.45E-01	6.94E-01	7.22E-02	3.45E-01
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	3.19E-01	1.22E+00	9.61E-02	3.66E-01
Benzo(k)fluoranthene	0.00E+00	0.00E+00	1.06E-01	3.82E-01	3.20E-02	1.15E-01
Cadmium	0.00E+00	0.00E+00	3.50E-01	1.06E+00	1.06E-01	3.21E-01
Chrysene	2.80E-01	1.60E+00	2.99E-01	1.71E+00	1.47E-01	8.37E-01
Dibenz(a,h)anthracene	0.00E+00	0.00E+00	3.27E-01	1.77E+00	9.85E-02	5.34E-01

**TABLE H-7
INTAKE CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
SANDPIPER**

Endosulfan Sulfate	9.00E-03	7.20E-03	0.00E+00	0.00E+00	1.81E-03	1.45E-03
Endrin Aldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	1.44E+00	8.50E+00	1.74E-01	1.03E+00	3.42E-01	2.02E+00
Fluorene	0.00E+00	0.00E+00	2.99E-02	1.03E-01	9.03E-03	3.09E-02
gamma-Chlordane	9.32E-04	1.90E-03	2.38E-03	4.86E-03	9.05E-04	1.85E-03
Indeno(1,2,3-cd)pyrene	0.00E+00	0.00E+00	3.24E-01	1.26E+00	9.75E-02	3.81E-01
Nickel	0.00E+00	0.00E+00	1.56E+01	1.63E+01	4.69E+00	4.91E+00
Phenanthrene	0.00E+00	0.00E+00	1.23E-01	6.96E-01	3.69E-02	2.10E-01
Pyrene	0.00E+00	0.00E+00	2.48E-01	1.07E+00	7.47E-02	3.22E-01
LPAH	6.51E-01	3.16E+00	3.20E-01	1.56E+00	2.27E-01	1.10E+00
HPAH	4.56E+00	2.17E+01	2.25E+00	1.07E+01	1.59E+00	7.57E+00
TOTAL PAHs	5.21E+00	2.48E+01	2.57E+00	1.22E+01	1.82E+00	8.68E+00
TOTAL INTAKE						
INTAKE = Sediment Intake + Food Intake						
Chemical					TOTAL Average Intake	TOTAL RME Intake
2-Methylnaphthalene					1.43E-02	6.76E-02
4,4'-DDT					1.09E-03	2.52E-03
Acenaphthene					1.71E-02	8.63E-02
Acenaphthylene					1.83E-02	9.62E-02
Anthracene					3.57E-02	1.56E-01
Benzo(a)anthracene					5.66E-02	3.19E-01
Benzo(a)pyrene					6.31E-02	2.89E-01
Benzo(b)fluoranthene					8.10E-02	3.87E-01
Benzo(g,h,i)perylene					1.15E-01	4.40E-01
Benzo(k)fluoranthene					3.84E-02	1.38E-01
Cadmium					1.16E-01	3.51E-01
Chrysene					1.68E-01	9.58E-01
Dibenz(a,h)anthracene					1.18E-01	6.41E-01
Endosulfan Sulfate					1.98E-03	1.59E-03
Endrin Aldehyde					9.77E-05	4.20E-04
Endrin Ketone					7.67E-05	1.95E-04
Fluoranthene					3.52E-01	2.08E+00
Fluorene					1.08E-02	3.71E-02
gamma-Chlordane					9.44E-04	1.93E-03
Indeno(1,2,3-cd)pyrene					1.17E-01	4.58E-01
Nickel					6.38E+00	6.68E+00
Phenanthrene					4.44E-02	2.52E-01
Pyrene					8.98E-02	3.86E-01
LPAH					2.47E-01	1.20E+00
HPAH					1.73E+00	8.22E+00
TOTAL PAHs					1.98E+00	9.42E+00

TABLE H-8
INTAKE CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
GREEN HERON

FOOD INGESTION						
INTAKE = ((Cf * IR * Dff * AUF)/(BW) + (Cc * IR * DFc * AUF) / (BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cf	Fish concentration (mg/kg)	see FoodConc page				
Cc	Crab concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.13E-01		EPA, 1993		
Dff	Dietary fraction of fish (unitless)	7.50E-01		Kent, 1986		
DFc	Dietary fraction of crab (unitless)	2.50E-01		Kent, 1986		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	3.75E-01		Dunning, 1993		

Chemical	Average Fish	RME Fish	Average Crab	RME Crab	Average Intake	RME Intake
2-Methylnaphthalene	1.14E-01	5.39E-01	0.00E+00	0.00E+00	2.57E-02	1.21E-01
4,4'-DDT	5.52E-04	1.28E-03	3.83E-03	8.84E-03	4.11E-04	9.50E-04
Acenaphthene	1.55E-02	8.17E-02	0.00E+00	0.00E+00	3.50E-03	1.84E-02
Acenaphthylene	1.55E-02	8.17E-02	0.00E+00	0.00E+00	3.50E-03	1.84E-02
Anthracene	2.42E-03	1.06E-02	9.42E-02	4.12E-01	7.61E-03	3.33E-02
Benzo(a)anthracene	3.58E-02	2.02E-01	1.37E-01	7.74E-01	1.84E-02	1.04E-01
Benzo(a)pyrene	6.86E-02	3.14E-01	1.56E-02	7.14E-02	1.66E-02	7.60E-02
Benzo(b)fluoranthene	5.95E-02	2.84E-01	1.42E-01	6.77E-01	2.40E-02	1.15E-01
Benzo(g,h,i)perylene	1.31E-01	4.98E-01	0.00E+00	0.00E+00	2.94E-02	1.12E-01
Benzo(k)fluoranthene	4.35E-02	1.56E-01	0.00E+00	0.00E+00	9.79E-03	3.52E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	1.43E-01	8.18E-01	2.80E-01	1.60E+00	5.32E-02	3.04E-01
Dibenz(a,h)anthracene	1.34E-01	7.26E-01	0.00E+00	0.00E+00	3.01E-02	1.63E-01
Endosulfan Sulfate	0.00E+00	0.00E+00	9.00E-03	7.20E-03	6.75E-04	5.40E-04
Endrin Aldehyde	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Endrin Ketone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	7.13E-02	4.20E-01	1.44E+00	8.50E+00	1.24E-01	7.32E-01
Fluorene	9.21E-03	3.15E-02	0.00E+00	0.00E+00	2.07E-03	7.09E-03
gamma-Chlordane	6.08E-04	1.24E-03	9.32E-04	1.90E-03	2.07E-04	4.22E-04
Indeno(1,2,3-cd)pyrene	1.33E-01	5.18E-01	0.00E+00	0.00E+00	2.98E-02	1.17E-01
Nickel	9.34E-01	9.77E-01	0.00E+00	0.00E+00	2.10E-01	2.20E-01
Phenanthrene	3.77E-02	2.14E-01	0.00E+00	0.00E+00	8.48E-03	4.81E-02
Pyrene	1.02E-01	4.38E-01	0.00E+00	0.00E+00	2.29E-02	9.85E-02
LPAH	9.87E-02	4.79E-01	6.51E-01	3.16E+00	7.10E-02	3.45E-01
HPAH	9.21E-01	4.38E+00	4.56E+00	2.17E+01	5.49E-01	2.61E+00
TOTAL PAHs	1.05E+00	5.01E+00	5.21E+00	2.48E+01	6.28E-01	2.99E+00

TABLE H-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
FIDDLER CRAB

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Fiddler Crab	Average EHQ	RME EHQ
2-Methylnaphthalene	8.25E-05	3.89E-04			
4,4'-DDT	2.20E-06	5.09E-06	1.47E-01	1.50E-05	3.46E-05
Acenaphthene	6.54E-05	2.15E-04			
Acenaphthylene	1.05E-04	5.53E-04			
Anthracene	9.65E-05	4.22E-04			
Benzo(a)anthracene	1.71E-04	9.63E-04			
Benzo(a)pyrene	3.46E-04	1.58E-03			
Benzo(b)fluoranthene	3.02E-04	1.44E-03			
Benzo(g,h,i)perylene	6.64E-04	2.53E-03			
Benzo(k)fluoranthene	2.21E-04	7.95E-04			
Cadmium	5.82E-04	1.77E-03	7.70E-01	7.56E-04	2.30E-03
Chrysene	6.63E-04	3.79E-03			
Dibenz(a,h)anthracene	6.81E-04	3.69E-03			
Endosulfan Sulfate	2.31E-06	1.85E-06			
Endrin Aldehyde	1.28E-06	5.52E-06	9.20E-02	1.40E-05	6.00E-05
Endrin Ketone	1.01E-06	2.57E-06	9.20E-02	1.10E-05	2.79E-05
Fluoranthene	3.62E-04	2.14E-03			
Fluorene	6.24E-05	2.14E-04			
gamma-Chlordane	3.58E-06	7.31E-06	4.60E+00	7.78E-07	1.59E-06
Indeno(1,2,3-cd)pyrene	6.74E-04	2.63E-03			
Nickel	4.22E-02	4.42E-02	1.70E+00	2.48E-02	2.60E-02
Phenanthrene	2.55E-04	1.45E-03			
Pyrene	5.16E-04	2.22E-03			
LPAH	6.67E-04	3.24E-03	6.56E+01	1.02E-05	4.94E-05
HPAH	4.68E-03	2.22E-02	9.31E+00	5.02E-04	2.39E-03
TOTAL PAHs	5.35E-03	2.55E-02			

TABLE H-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
SANDPIPER

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Sandpiper	Average EHQ	RME EHQ
2-Methylnaphthalene	1.43E-02	6.76E-02			
4,4'-DDT	1.09E-03	2.52E-03	2.27E-01	4.81E-03	1.11E-02
Acenaphthene	1.71E-02	8.63E-02			
Acenaphthylene	1.83E-02	9.62E-02			
Anthracene	3.57E-02	1.56E-01			
Benzo(a)anthracene	5.66E-02	3.19E-01			
Benzo(a)pyrene	6.31E-02	2.89E-01			
Benzo(b)fluoranthene	8.10E-02	3.87E-01			
Benzo(g,h,i)perylene	1.15E-01	4.40E-01			
Benzo(k)fluoranthene	3.84E-02	1.38E-01			
Cadmium	1.16E-01	3.51E-01	1.47E+00	7.86E-02	2.39E-01
Chrysene	1.68E-01	9.58E-01			
Dibenz(a,h)anthracene	1.18E-01	6.41E-01			
Endosulfan Sulfate	1.98E-03	1.59E-03			
Endrin Aldehyde	9.77E-05	4.20E-04	1.00E-02	9.77E-03	4.20E-02
Endrin Ketone	7.67E-05	1.95E-04	1.00E-02	7.67E-03	1.95E-02
Fluoranthene	3.52E-01	2.08E+00			
Fluorene	1.08E-02	3.71E-02			
gamma-Chlordane	9.44E-04	1.93E-03	2.14E+00	4.41E-04	9.01E-04
Indeno(1,2,3-cd)pyrene	1.17E-01	4.58E-01			
Nickel	6.38E+00	6.68E+00	6.71E+00	9.51E-01	9.95E-01
Phenanthrene	4.44E-02	2.52E-01			
Pyrene	8.98E-02	3.86E-01			
LPAH	2.47E-01	1.20E+00	6.56E+01	3.76E-03	1.83E-02
HPAH	1.73E+00	8.22E+00	9.31E+00	1.86E-01	8.83E-01
TOTAL PAHs	1.98E+00	9.42E+00			

TABLE H-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SEDIMENT NORTH OF MARLIN
GREEN HERON

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Green Heron	Average EHQ	RME EHQ
2-Methylnaphthalene	2.57E-02	1.21E-01			
4,4'-DDT	4.11E-04	9.50E-04	2.27E-01	1.81E-03	4.19E-03
Acenaphthene	3.50E-03	1.84E-02			
Acenaphthylene	3.50E-03	1.84E-02			
Anthracene	7.61E-03	3.33E-02			
Benzo(a)anthracene	1.84E-02	1.04E-01			
Benzo(a)pyrene	1.66E-02	7.60E-02			
Benzo(b)fluoranthene	2.40E-02	1.15E-01			
Benzo(g,h,i)perylene	2.94E-02	1.12E-01			
Benzo(k)fluoranthene	9.79E-03	3.52E-02			
Cadmium	0.00E+00	0.00E+00	1.47E+00		
Chrysene	5.32E-02	3.04E-01			
Dibenz(a,h)anthracene	3.01E-02	1.63E-01			
Endosulfan Sulfate	6.75E-04	5.40E-04			
Endrin Aldehyde	0.00E+00	0.00E+00	1.00E-02	0.00E+00	0.00E+00
Endrin Ketone	0.00E+00	0.00E+00	1.00E-02	0.00E+00	0.00E+00
Fluoranthene	1.24E-01	7.32E-01			
Fluorene	2.07E-03	7.09E-03			
gamma-Chlordane	2.07E-04	4.22E-04	2.14E+00	9.65E-05	1.97E-04
Indeno(1,2,3-cd)pyrene	2.98E-02	1.17E-01			
Nickel	2.10E-01	2.20E-01	6.71E+00	3.13E-02	3.28E-02
Phenanthrene	8.48E-03	4.81E-02			
Pyrene	2.29E-02	9.85E-02			
LPAH	7.10E-02	3.45E-01	6.56E+01	1.08E-03	5.26E-03
HPAH	5.49E-01	2.61E+00	9.31E+00	5.90E-02	2.80E-01
TOTAL PAHs	6.28E-01	2.99E+00			

TABLE H-12
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAFor BCF with food chain multiplier)										
where:										
Cfood =	Chemical Concentration in food (mg/kg dry)									
Csed =	Chemical Concentration in soil (mg/kg dry)									
BSAF	Biota to Sediment Accumulation Factor (unitless)									
BCF =	Bioconcentration Factor (unitless)									
Compound	Average Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
2-Methylnaphthalene	2.46E-02	1.61E+00	3.96E-02	EPA, 1999		0.00E+00		4.65E+00	1.14E-01	Brunson et al. (1998)
4,4'-DDT	9.52E-04	8.00E-01	7.62E-04	BSAF DB	4.02E+00	3.83E-03	BSAF DB	5.80E-01	5.52E-04	WSDOH, 1995
Acenaphthene	1.95E-02	1.61E+00	3.14E-02	EPA, 1999		0.00E+00		0.495	9.65E-03	WSDOH, 1995
Acenaphthylene	3.14E-02	1.61E+00	5.06E-02	EPA, 1999		0.00E+00		0.495	1.55E-02	WSDOH, 1995
Anthracene	2.88E-02	1.61E+00	4.64E-02	EPA, 1999	3.27E+00	9.42E-02	BSAF DB	8.40E-02	2.42E-03	WSDOH, 1995
Benzo(a)anthracene	5.43E-02	1.45E+00	7.87E-02	EPA, 1999	2.53E+00	1.37E-01	BSAF DB	6.60E-01	3.58E-02	WSDOH, 1995
Benzo(a)pyrene	1.04E-01	1.59E+00	1.65E-01	EPA, 1999	1.50E-01	1.56E-02	BSAF DB	6.60E-01	6.86E-02	WSDOH, 1995
Benzo(b)fluoranthene	9.02E-02	1.61E+00	1.45E-01	EPA, 1999	1.57E+00	1.42E-01	BSAF DB	6.60E-01	5.95E-02	WSDOH, 1995
Benzo(g,h,i)perylene	1.98E-01	1.61E+00	3.19E-01	EPA, 1999		0.00E+00		6.60E-01	1.31E-01	WSDOH, 1995
Benzo(k)fluoranthene	6.59E-02	1.61E+00	1.06E-01	EPA, 1999		0.00E+00		6.60E-01	4.35E-02	WSDOH, 1995
Cadmium	1.03E-01	3.40E+00	3.50E-01	EPA, 1999		0.00E+00			0.00E+00	
Chrysene	2.17E-01	1.38E+00	2.99E-01	EPA, 1999	1.29E+00	2.80E-01	BSAF DB	6.60E-01	1.43E-01	WSDOH, 1995
Dibenz(a,h)anthracene	2.03E-01	1.61E+00	3.27E-01	EPA, 1999		0.00E+00		6.60E-01	1.34E-01	WSDOH, 1995
Endosulfan Sulfate	1.80E-03		0.00E+00		5.00E+00	9.00E-03	BSAF DB		0.00E+00	
Endrin Aldehyde	1.00E-03		0.00E+00			0.00E+00			0.00E+00	
Endrin Ketone	7.85E-04		0.00E+00			0.00E+00			0.00E+00	
Fluoranthene	1.08E-01	1.61E+00	1.74E-01	EPA, 1999	1.33E+01	1.44E+00	BSAF DB	6.60E-01	7.13E-02	WSDOH, 1995
Fluorene	1.86E-02	1.61E+00	2.99E-02	EPA, 1999		0.00E+00		4.95E-01	9.21E-03	WSDOH, 1995
gamma-Chlordane	4.05E-04	5.88E+00	2.38E-03	BSAF DB	2.30E+00	9.32E-04	BSAF DB	1.50E+00	6.08E-04	BSAF DB
Indeno(1,2,3-cd)pyrene	2.01E-01	1.61E+00	3.24E-01	EPA, 1999		0.00E+00		6.60E-01	1.33E-01	WSDOH, 1995
Nickel	1.73E+01	9.00E-01	1.56E+01	EPA, 1999		0.00E+00		5.40E-02	9.34E-01	Max value from Calcasieu RI
Phenanthrene	7.61E-02	1.61E+00	1.23E-01	EPA, 1999		0.00E+00		4.95E-01	3.77E-02	WSDOH, 1995
Pyrene	1.54E-01	1.61E+00	2.48E-01	EPA, 1999		0.00E+00		6.60E-01	1.02E-01	WSDOH, 1995
LPAH	1.99E-01	1.61E+00	3.20E-01	EPA, 1999	3.27E+00	6.51E-01	max PAH	4.96E-01	9.87E-02	WSDOH, 1995
HPAH	1.40E+00	1.61E+00	2.25E+00	EPA, 1999	3.27E+00	4.56E+00	max PAH	6.60E-01	9.21E-01	WSDOH, 1995
TOTAL PAHs	1.59E+00	1.61E+00	2.57E+00	EPA, 1999	3.27E+00	5.21E+00	max PAH	6.60E-01	1.05E+00	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE H-13
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAFor BCF with food chain multiplier)										
where:										
Cfood =	Chemical Concentration in food (mg/kg dry)									
Csed =	Chemical Concentration in soil (mg/kg dry)									
BSAF	Biota to Sediment Accumulation Factor (unitless)									
BCF =	Bioconcentration Factor (unitless)									
Compound	RME Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
2-Methylnaphthalene	1.16E-01	1.61E+00	1.87E-01	EPA, 1999		0.00E+00		4.65E+00	5.39E-01	Brunson et al. (1998)
4,4'-DDT	2.20E-03	8.00E-01	1.76E-03	BSAF DB	4.02E+00	8.84E-03	BSAF DB	5.80E-01	1.28E-03	WSDOH, 1995
Acenaphthene	6.40E-02	1.61E+00	1.03E-01	EPA, 1999		0.00E+00		0.495	3.17E-02	WSDOH, 1995
Acenaphthylene	1.65E-01	1.61E+00	2.66E-01	EPA, 1999		0.00E+00		0.495	8.17E-02	WSDOH, 1995
Anthracene	1.26E-01	1.61E+00	2.03E-01	EPA, 1999	3.27E+00	4.12E-01	BSAF DB	8.40E-02	1.06E-02	WSDOH, 1995
Benzo(a)anthracene	3.06E-01	1.45E+00	4.44E-01	EPA, 1999	2.53E+00	7.74E-01	BSAF DB	6.60E-01	2.02E-01	WSDOH, 1995
Benzo(a)pyrene	4.76E-01	1.59E+00	7.57E-01	EPA, 1999	1.50E-01	7.14E-02	BSAF DB	6.60E-01	3.14E-01	WSDOH, 1995
Benzo(b)fluoranthene	4.31E-01	1.61E+00	6.94E-01	EPA, 1999	1.57E+00	6.77E-01	BSAF DB	6.60E-01	2.84E-01	WSDOH, 1995
Benzo(g,h,i)perylene	7.55E-01	1.61E+00	1.22E+00	EPA, 1999		0.00E+00		6.60E-01	4.98E-01	WSDOH, 1995
Benzo(k)fluoranthene	2.37E-01	1.61E+00	3.82E-01	EPA, 1999		0.00E+00		6.60E-01	1.56E-01	WSDOH, 1995
Cadmium	3.13E-01	3.40E+00	1.06E+00	EPA, 1999		0.00E+00			0.00E+00	
Chrysene	1.24E+00	1.38E+00	1.71E+00	EPA, 1999	1.29E+00	1.60E+00	BSAF DB	6.60E-01	8.18E-01	WSDOH, 1995
Dibenz(a,h)anthracene	1.10E+00	1.61E+00	1.77E+00	EPA, 1999		0.00E+00		6.60E-01	7.26E-01	WSDOH, 1995
Endosulfan Sulfate	1.44E-03		0.00E+00		5.00E+00	7.20E-03	BSAF DB		0.00E+00	
Endrin Aldehyde	4.30E-03		0.00E+00			0.00E+00			0.00E+00	
Endrin Ketone	2.00E-03		0.00E+00			0.00E+00			0.00E+00	
Fluoranthene	6.37E-01	1.61E+00	1.03E+00	EPA, 1999	1.33E+01	8.50E+00	BSAF DB	6.60E-01	4.20E-01	WSDOH, 1995
Fluorene	6.37E-02	1.61E+00	1.03E-01	EPA, 1999		0.00E+00		4.95E-01	3.15E-02	WSDOH, 1995
gamma-Chlordane	8.27E-04	5.88E+00	4.86E-03	BSAF DB	2.30E+00	1.90E-03	BSAF DB	1.50E+00	1.24E-03	BSAF DB
Indeno(1,2,3-cd)pyrene	7.85E-01	1.61E+00	1.26E+00	EPA, 1999		0.00E+00		6.60E-01	5.18E-01	WSDOH, 1995
Nickel	1.81E+01	9.00E-01	1.63E+01	EPA, 1999		0.00E+00		5.40E-02	9.77E-01	Max value from Calcasieu RI
Phenanthrene	4.32E-01	1.61E+00	6.96E-01	EPA, 1999		0.00E+00		4.95E-01	2.14E-01	WSDOH, 1995
Pyrene	6.63E-01	1.61E+00	1.07E+00	EPA, 1999		0.00E+00		6.60E-01	4.38E-01	WSDOH, 1995
LPAH	9.67E-01	1.61E+00	1.56E+00	EPA, 1999	3.27E+00	3.16E+00	max PAH	4.96E-01	4.79E-01	WSDOH, 1995
HPAH	6.63E+00	1.61E+00	1.07E+01	EPA, 1999	3.27E+00	2.17E+01	max PAH	6.60E-01	4.38E+00	WSDOH, 1995
TOTAL PAHs	7.60E+00	1.61E+00	1.22E+01	EPA, 1999	3.27E+00	2.48E+01	max PAH	6.60E-01	5.01E+00	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE I-1
EXPOSURE POINT CONCENTRATION (mg/kg)
POND SEDIMENT

Parameter	Average		95% UCL	Statistic Used
4,4'-DDD	6.96E-03		6.76E-04	RME EPC is max detect*
4,4'-DDT	4.16E-03		1.57E-03	RME EPC is max detect*
Benzo(b)fluoranthene	4.77E-02		1.06E-01	RME EPC is max detect
Benzo(g,h,i)perylene	2.40E-02		1.35E-01	RME EPC is max detect
Benzo(k)fluoranthene	5.27E-02		1.30E-01	RME EPC is max detect
Cadmium	1.47E-01		2.70E-01	RME EPC is max detect
Chrysene	9.50E-03		2.57E-02	RME EPC is max detect
Nickel	1.63E+01		2.06E+01	RME EPC is max detect
Pyrene	1.47E-02		2.65E-02	RME EPC is max detect
LPAHs				
HPAH	1.49E-01		4.23E-01	
TOTAL PAHs	1.49E-01		4.23E-01	

Notes:

*The maximum detected value is sometimes lower than the average since the reporting limit was used as a proxy value when it was not detected and because J flag data were used in the risk assessment.

TABLE I-2
TOXICITY REFERENCE VALUES

Parameter	Capitella capitata (mg/kg)	Ref.	Comments	Capitella capitata (mg/kg)	Ref.	Comments	Fiddler Crab (mg/kgBW-day)	Ref.	Comments	Black Drum (mg/kgBW-day)	Ref.	Comments	Spotted seatrout (mg/kgBW-day)	Ref.	Comments	Sandpiper (mg/kgBW-day)	Ref.	Comments	Green heron (mg/kgBW-day)	Ref.	Comments
4,4'-DDD	0.001	SQUIRT	ERL	0.007	SQUIRT	ERM	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
4,4'-DDT	0.001	SQUIRT	ERL	0.007	SQUIRT	ERM	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Benzo(b)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
Benzo(g,h,i)perylene	0.67	SQUIRT	AET	0.67	SQUIRT	AET															
Benzo(k)fluoranthene	1.8	SQUIRT	AET	1.8	SQUIRT	AET															
Cadmium	1.2	SQUIRT	ERL	9.6	SQUIRT	ERM	0.77	EPA, 2005b	mammalian TRV for soil	0.77	EPA, 2005b	mammalian TRV for soil	0.77	EPA, 2005b	mammalian TRV for soil	1.47	EPA, 1999	Geometric mean of NOAEL values for reproduction and growth	1.47	EPA, 1999	Geometric mean of NOAEL values for reproduction and growth
Chrysene	0.384	SQUIRT	ERL	2.8	SQUIRT	ERM															
Nickel	20.9	SQUIRT	ERL	51.6	SQUIRT	ERM	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	6.71	EPA, 2007d	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Pyrene	0.665	SQUIRT	ERL	2.6	SQUIRT	ERM															
LPAH	0.552	SQUIRT	ERL	3.162	SQUIRT	ERM	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil	65.6	EPA, 2007b	mammalian TRV for soil
HPAH	1.7	SQUIRT	ERL	9.6	SQUIRT	ERM	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV	9.31	EPA, 2007b	midpoint between NOAEL and LOAEL for soil mammalian TRV
TOTAL PAHs	4.022	SQUIRT	ERL	44.792	SQUIRT	ERM															

Notes:
ERL -- Effects Range-Low
AET -- Apparent Effects Threshold
TEL -- Threshold Effects Level

EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2007f -- Selenium
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead
EPA, 2005f -- Dieldrin
EPA, 2005g -- Barium

**TABLE I-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA**

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDD	6.96E-03	6.76E-04	1.00E-03	6.96E+00	6.76E-01
4,4'-DDT	4.16E-03	1.57E-03	1.00E-03	4.16E+00	1.57E+00
Benzo(b)fluoranthene	4.77E-02	1.06E-01	1.80E+00	2.65E-02	5.89E-02
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	6.70E-01	3.58E-02	2.01E-01
Benzo(k)fluoranthene	5.27E-02	1.30E-01	1.80E+00	2.93E-02	7.22E-02
Cadmium	1.47E-01	2.70E-01	1.20E+00	1.23E-01	2.25E-01
Chrysene	9.50E-03	2.57E-02	3.84E-01	2.47E-02	6.69E-02
Nickel	1.63E+01	2.06E+01	2.09E+01	7.81E-01	9.86E-01
Pyrene	1.47E-02	2.65E-02	6.65E-01	2.21E-02	3.98E-02
LPAH			5.52E-01		
HPAH	1.49E-01	4.23E-01	1.70E+00	8.74E-02	2.49E-01
TOTAL PAHs	1.49E-01	4.23E-01	4.02E+00	3.69E-02	1.05E-01

TABLE I-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA -- MIDPOINT BETWEEN ERL AND ERM COMPARISON

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition	Default			
Sc	Soil Concentration (mg/kg)	see below			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDD	6.96E-03	6.76E-04	4.00E-03	1.74E+00	1.69E-01
4,4'-DDT	4.16E-03	1.57E-03	4.00E-03	1.04E+00	3.93E-01
Benzo(b)fluoranthene	4.77E-02	1.06E-01	1.80E+00	2.65E-02	5.89E-02
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	6.70E-01	3.58E-02	2.01E-01
Benzo(k)fluoranthene	5.27E-02	1.30E-01	1.80E+00	2.93E-02	7.22E-02
Cadmium	1.47E-01	2.70E-01	5.40E+00	2.73E-02	5.00E-02
Chrysene	9.50E-03	2.57E-02	1.59E+00	5.97E-03	1.61E-02
Nickel	1.63E+01	2.06E+01	3.63E+01	4.50E-01	5.68E-01
Pyrene	1.47E-02	2.65E-02	1.63E+00	9.00E-03	1.62E-02
LPAH			1.86E+00		
HPAH	1.49E-01	4.23E-01	5.65E+00	2.63E-02	7.49E-02
TOTAL PAHs	1.49E-01	4.23E-01	2.44E+01	6.09E-03	1.73E-02

TABLE I-5
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA -- ERM COMPARISON

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDD	6.96E-03	6.76E-04	7.00E-03	9.94E-01	9.66E-02
4,4'-DDT	4.16E-03	1.57E-03	7.00E-03	5.94E-01	2.24E-01
Benzo(b)fluoranthene	4.77E-02	1.06E-01	1.80E+00	2.65E-02	5.89E-02
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	6.70E-01	3.58E-02	2.01E-01
Benzo(k)fluoranthene	5.27E-02	1.30E-01	1.80E+00	2.93E-02	7.22E-02
Cadmium	1.47E-01	2.70E-01	9.60E+00	1.53E-02	2.81E-02
Chrysene	9.50E-03	2.57E-02	2.80E+00	3.39E-03	9.18E-03
Nickel	1.63E+01	2.06E+01	5.16E+01	3.16E-01	3.99E-01
Pyrene	1.47E-02	2.65E-02	2.60E+00	5.65E-03	1.02E-02
LPAH			3.16E+00		
HPAH	1.49E-01	4.23E-01	9.60E+00	1.55E-02	4.41E-02
TOTAL PAHs	1.49E-01	4.23E-01	4.48E+01	3.32E-03	9.45E-03

**TABLE I-6
INTAKE CALCULATIONS FOR POND SEDIMENT
FIDDLER CRAB**

SEDIMENT INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Sed concentration (mg/kg)	see data page		
IR	Ingestion rate of sed (kg/day)	1.16E-05	Cammen, 1979	
AF	Chemical Bioavailability in sediment (unitless)	1	EPA, 1997	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
4,4'-DDD	6.96E-03	6.76E-04	8.93E-06	8.68E-07
4,4'-DDT	4.16E-03	1.57E-03	5.34E-06	2.02E-06
Benzo(b)fluoranthene	4.77E-02	1.06E-01	6.12E-05	1.36E-04
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	3.08E-05	1.73E-04
Benzo(k)fluoranthene	5.27E-02	1.30E-01	6.77E-05	1.67E-04
Cadmium	1.47E-01	2.70E-01	1.89E-04	3.47E-04
Chrysene	9.50E-03	2.57E-02	1.22E-05	3.30E-05
Nickel	1.63E+01	2.06E+01	2.10E-02	2.65E-02
Pyrene	1.47E-02	2.65E-02	1.89E-05	3.40E-05
LPAH				
HPAH	1.49E-01	4.23E-01	1.91E-04	5.44E-04
TOTAL PAHs	1.49E-01	4.23E-01	1.91E-04	5.44E-04
FOOD INGESTION				
INTAKE = (Ci * IR * DFi * AUF) / (BW)				
Parameter	Definition	Value	Reference	
Intake	Intake of chemical (mg/kg-day)	calculated		
Ci	Invertebrate concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	1.16E-05	Cammen, 1979	
Dfi	Dietary fraction of invertebrates (unitless)	1.00E+00	TPWD website	
AUF	Area Use Factor	1	EPA, 1997	
BW	Body weight (kg)	9.00E-03	based on width/length eq.	
Chemical	Average Invertebrate	RME Invertebrate	Average Intake	RME Intake
4,4'-DDD	5.56E-03	5.41E-04	7.15E-06	6.95E-07
4,4'-DDT	3.33E-03	1.26E-03	4.27E-06	1.61E-06
Benzo(b)fluoranthene	7.67E-02	1.71E-01	9.86E-05	2.19E-04
Benzo(g,h,i)perylene	3.86E-02	2.17E-01	4.96E-05	2.79E-04
Benzo(k)fluoranthene	8.48E-02	2.09E-01	1.09E-04	2.69E-04
Cadmium	5.00E-01	9.18E-01	6.43E-04	1.18E-03
Chrysene	3.26E-02	8.82E-02	4.19E-05	1.13E-04
Nickel	1.47E+01	1.85E+01	1.89E-02	2.38E-02
Pyrene	2.37E-02	4.27E-02	3.04E-05	5.48E-05
LPAH				
HPAH	2.39E-01	6.81E-01	3.07E-04	8.75E-04
TOTAL PAHs	2.39E-01	6.81E-01	3.07E-04	8.75E-04
TOTAL INTAKE				
INTAKE = Sediment Intake + Food Intake				
Chemical	TOTAL Average Intake		TOTAL RME Intake	
4,4'-DDD	1.61E-05		1.56E-06	
4,4'-DDT	9.62E-06		3.63E-06	
Benzo(b)fluoranthene	1.60E-04		3.55E-04	
Benzo(g,h,i)perylene	8.04E-05		4.53E-04	
Benzo(k)fluoranthene	1.77E-04		4.36E-04	
Cadmium	8.32E-04		1.53E-03	
Chrysene	5.41E-05		1.46E-04	
Nickel	3.98E-02		5.03E-02	
Pyrene	4.93E-05		8.88E-05	
LPAH				
HPAH	4.98E-04		1.42E-03	
TOTAL PAHs	4.98E-04		1.42E-03	

**TABLE I-7
INTAKE CALCULATIONS FOR POND SEDIMENT
SANDPIPER**

SEDIMENT INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Sc	Sediment concentration (mg/kg)	see data page				
IR	Ingestion rate of sed (kg/day)	2.10E-02		EPA, 1993		
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
4,4'-DDD	6.96E-03	6.76E-04	6.79E-04	6.60E-05		
4,4'-DDT	4.16E-03	1.57E-03	4.06E-04	1.53E-04		
Benzo(b)fluoranthene	4.77E-02	1.06E-01	4.66E-03	1.04E-02		
Benzo(g,h,i)perylene	2.40E-02	1.35E-01	2.34E-03	1.32E-02		
Benzo(k)fluoranthene	5.27E-02	1.30E-01	5.15E-03	1.27E-02		
Cadmium	1.47E-01	2.70E-01	1.44E-02	2.64E-02		
Chrysene	9.50E-03	2.57E-02	9.28E-04	2.51E-03		
Nickel	1.63E+01	2.06E+01	1.59E+00	2.01E+00		
Pyrene	1.47E-02	2.65E-02	1.44E-03	2.59E-03		
LPAH						
HPAH	1.49E-01	4.23E-01	1.45E-02	4.13E-02		
TOTAL PAHs	1.49E-01	4.23E-01	1.45E-02	4.13E-02		
FOOD INGESTION						
INTAKE = ((Cc * IR * Dfc * AUF)/(BW) + (Cw * IR * DFwa * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cc	Crab concentration (mg/kg)	see FoodConc page				
Cw	Worm concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.08E-01		EPA, 1993		
Dfc	Dietary fraction of crabs (unitless)	4.00E-01		prof. judgement		
DFw	Dietary fraction of worms (unitless)	6.00E-01		prof. judgement		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	2.15E-01		Dunning, 1993		
Chemical	Average Crab	RME Crab	Average Worm	RME Worm	Average Intake	RME Intake
4,4'-DDD	2.80E-02	2.72E-03	5.56E-03	5.41E-04	7.30E-03	7.09E-04
4,4'-DDT	1.67E-02	6.31E-03	3.33E-03	1.26E-03	4.36E-03	1.65E-03
Benzo(b)fluoranthene	7.48E-02	1.66E-01	7.67E-02	1.71E-01	3.82E-02	8.49E-02
Benzo(g,h,i)perylene	3.76E-02	2.12E-01	3.86E-02	2.17E-01	1.92E-02	1.08E-01
Benzo(k)fluoranthene	8.27E-02	2.04E-01	8.48E-02	2.09E-01	4.22E-02	1.04E-01
Cadmium	0.00E+00	0.00E+00	5.00E-01	9.18E-01	1.51E-01	2.77E-01
Chrysene	1.23E-02	3.32E-02	3.26E-02	8.82E-02	1.23E-02	3.32E-02
Nickel	0.00E+00	0.00E+00	1.47E+01	1.85E+01	4.43E+00	5.59E+00
Pyrene	0.00E+00	0.00E+00	2.37E-02	4.27E-02	7.13E-03	1.29E-02
LPAH						
HPAH	4.86E-01	1.38E+00	2.39E-01	6.81E-01	1.70E-01	4.83E-01
TOTAL PAHs	4.86E-01	1.38E+00	2.39E-01	6.81E-01	1.70E-01	4.83E-01
TOTAL INTAKE						
INTAKE = Sediment Intake + Food Intake						
Chemical					TOTAL Average Intake	TOTAL RME Intake
4,4'-DDD					7.98E-03	7.75E-04
4,4'-DDT					4.77E-03	1.80E-03
Benzo(b)fluoranthene					4.28E-02	9.52E-02
Benzo(g,h,i)perylene					2.15E-02	1.21E-01
Benzo(k)fluoranthene					4.73E-02	1.17E-01
Cadmium					1.65E-01	3.03E-01
Chrysene					1.32E-02	3.57E-02
Nickel					6.02E+00	7.60E+00
Pyrene					8.57E-03	1.54E-02
LPAH						
HPAH					1.84E-01	5.25E-01
TOTAL PAHs					1.84E-01	5.25E-01

**TABLE I-8
INTAKE CALCULATIONS FOR POND SEDIMENT
GREEN HERON**

FOOD INGESTION						
INTAKE = ((Cf * IR * Dff * AUF)/(BW) + (Cc * IR * DFc * AUF) / (BW))						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
Cf	Fish concentration (mg/kg)	see FoodConc page				
Cc	Crab concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.13E-01			EPA, 1993	
Dff	Dietary fraction of fish (unitless)	7.50E-01			Kent, 1986	
DFc	Dietary fraction of crab (unitless)	2.50E-01			Kent, 1986	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	3.75E-01			Dunning, 1993	

Chemical	Average Fish	RME Fish	Average Crab	RME Crab	Average Intake	RME Intake
4,4'-DDD	4.03E-03	3.92E-04	2.80E-02	2.72E-03	3.00E-03	2.92E-04
4,4'-DDT	2.41E-03	9.11E-04	1.67E-02	6.31E-03	1.80E-03	6.78E-04
Benzo(b)fluoranthene	3.15E-02	7.00E-02	7.48E-02	1.66E-01	1.27E-02	2.82E-02
Benzo(g,h,i)perylene	1.58E-02	8.91E-02	3.76E-02	2.12E-01	6.38E-03	3.59E-02
Benzo(k)fluoranthene	3.48E-02	8.58E-02	8.27E-02	2.04E-01	1.40E-02	3.46E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	6.27E-03	1.70E-02	1.23E-02	3.32E-02	2.33E-03	6.30E-03
Nickel	8.82E-01	1.11E+00	0.00E+00	0.00E+00	1.98E-01	2.50E-01
Pyrene	9.70E-03	1.75E-02	0.00E+00	0.00E+00	2.18E-03	3.94E-03
LPAH						
HPAH	9.80E-02	2.79E-01	4.86E-01	1.38E+00	5.85E-02	1.67E-01
TOTAL PAHs	9.80E-02	2.79E-01	4.86E-01	1.38E+00	5.85E-02	1.67E-01

TABLE I-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
FIDDLER CRAB

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Fiddler Crab	Average EHQ	RME EHQ
4,4'-DDD	1.61E-05	1.56E-06	1.47E-01	1.09E-04	1.06E-05
4,4'-DDT	9.62E-06	3.63E-06	1.47E-01	6.54E-05	2.47E-05
Benzo(b)fluoranthene	1.60E-04	3.55E-04			
Benzo(g,h,i)perylene	8.04E-05	4.53E-04			
Benzo(k)fluoranthene	1.77E-04	4.36E-04			
Cadmium	8.32E-04	1.53E-03	7.70E-01	1.08E-03	1.98E-03
Chrysene	5.41E-05	1.46E-04			
Nickel	3.98E-02	5.03E-02	1.70E+00	2.34E-02	2.96E-02
Pyrene	4.93E-05	8.88E-05			
LPAH					
HPAH	4.98E-04	1.42E-03	9.31E+00	5.35E-05	1.52E-04
TOTAL PAHs	4.98E-04	1.42E-03			

**TABLE I-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
SANDPIPER**

Ecological Hazard Quotient =		Intake/TRV			
Parameter	Definition	Default			
Intake	Intake of COPC (mg/kg-day)	see Intake			
TRV	Toxicity Reference Value (mg/kg)	see TRV summary page			
Chemical	Average Intake	RME Intake	TRV Sandpiper	Average EHQ	RME EHQ
4,4'-DDD	7.98E-03	7.75E-04	2.27E-01	3.51E-02	3.41E-03
4,4'-DDT	4.77E-03	1.80E-03	2.27E-01	2.10E-02	7.93E-03
Benzo(b)fluoranthene	4.28E-02	9.52E-02			
Benzo(g,h,i)perylene	2.15E-02	1.21E-01			
Benzo(k)fluoranthene	4.73E-02	1.17E-01			
Cadmium	1.65E-01	3.03E-01	1.47E+00	1.12E-01	2.06E-01
Chrysene	1.32E-02	3.57E-02			
Nickel	6.02E+00	7.60E+00	6.71E+00	8.98E-01	1.13E+00
Pyrene	8.57E-03	1.54E-02			
LPAH					
HPAH	1.84E-01	5.25E-01	9.31E+00	1.98E-02	5.64E-02
TOTAL PAHs	1.84E-01	5.25E-01			

TABLE I-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
GREEN HERON

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Green Heron	Average EHQ	RME EHQ
4,4'-DDD	3.00E-03	2.92E-04	2.27E-01	1.32E-02	1.29E-03
4,4'-DDT	1.80E-03	6.78E-04	2.27E-01	7.92E-03	2.99E-03
Benzo(b)fluoranthene	1.27E-02	2.82E-02			
Benzo(g,h,i)perylene	6.38E-03	3.59E-02			
Benzo(k)fluoranthene	1.40E-02	3.46E-02			
Cadmium	0.00E+00	0.00E+00	1.47E+00	0.00E+00	0.00E+00
Chrysene	2.33E-03	6.30E-03			
Nickel	1.98E-01	2.50E-01	6.71E+00	2.96E-02	3.73E-02
Pyrene	2.18E-03	3.94E-03			
LPAH					
HPAH	5.85E-02	1.67E-01	9.31E+00	6.28E-03	1.79E-02
TOTAL PAHs	5.85E-02	1.67E-01			

TABLE 1-12
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
Cfood = Chemical Concentration in food (mg/kg dry)										
Csed = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	Average Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDD	6.96E-03	8.00E-01	5.56E-03	BSAF DB	4.02E+00	2.80E-02	BSAF DB	5.80E-01	4.03E-03	WSDOH, 1995
4,4'-DDT	4.16E-03	8.00E-01	3.33E-03	BSAF DB	4.02E+00	1.67E-02	BSAF DB	5.80E-01	2.41E-03	WSDOH, 1995
Benzo(b)fluoranthene	4.77E-02	1.61E+00	7.67E-02	EPA, 1999	1.57E+00	7.48E-02	BSAF DB	6.60E-01	3.15E-02	WSDOH, 1995
Benzo(g,h,i)perylene	2.40E-02	1.61E+00	3.86E-02	EPA, 1999	1.57E+00	3.76E-02	BSAF DB	6.60E-01	1.58E-02	WSDOH, 1995
Benzo(k)fluoranthene	5.27E-02	1.61E+00	8.48E-02	EPA, 1999	1.57E+00	8.27E-02	BSAF DB	6.60E-01	3.48E-02	WSDOH, 1995
Cadmium	1.47E-01	3.40E+00	5.00E-01	EPA, 1999		0.00E+00			0.00E+00	
Chrysene	9.50E-03	3.43E+00	3.26E-02	BSAF DB	1.29E+00	1.23E-02	BSAF DB	6.60E-01	6.27E-03	WSDOH, 1995
Nickel	1.63E+01	9.00E-01	1.47E+01	EPA, 1999		0.00E+00		5.40E-02	8.82E-01	Max value from Calcasieu RI
Pyrene	1.47E-02	1.61E+00	2.37E-02	EPA, 1999		0.00E+00		6.60E-01	9.70E-03	WSDOH, 1995
LPAH		1.61E+00	0.00E+00	EPA, 1999						
HPAH	1.49E-01	1.61E+00	2.39E-01	EPA, 1999	3.27E+00	4.86E-01	max PAH	6.60E-01	9.80E-02	WSDOH, 1995
TOTAL PAHs	1.49E-01	1.61E+00	2.39E-01	EPA, 1999	3.27E+00	4.86E-01	max PAH	6.60E-01	9.80E-02	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE I-13
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)

Cfood = Csed x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
Cfood = Chemical Concentration in food (mg/kg dry)										
Csed = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	RME Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDD	6.76E-04	8.00E-01	5.41E-04	BSAF DB	4.02E+00	2.72E-03	BSAF DB	5.80E-01	3.92E-04	WSDOH, 1995
4,4'-DDT	1.57E-03	8.00E-01	1.26E-03	BSAF DB	4.02E+00	6.31E-03	BSAF DB	5.80E-01	9.11E-04	WSDOH, 1995
Benzo(b)fluoranthene	1.06E-01	1.61E+00	1.71E-01	EPA, 1999	1.57E+00	1.66E-01	BSAF DB	6.60E-01	7.00E-02	WSDOH, 1995
Benzo(g,h,i)perylene	1.35E-01	1.61E+00	2.17E-01	EPA, 1999	1.57E+00	2.12E-01	BSAF DB	6.60E-01	8.91E-02	WSDOH, 1995
Benzo(k)fluoranthene	1.30E-01	1.61E+00	2.09E-01	EPA, 1999	1.57E+00	2.04E-01	BSAF DB	6.60E-01	8.58E-02	WSDOH, 1995
Cadmium	2.70E-01	3.40E+00	9.18E-01	EPA, 1999		0.00E+00			0.00E+00	
Chrysene	2.57E-02	3.43E+00	8.82E-02	BSAF DB	1.29E+00	3.32E-02	BSAF DB	6.60E-01	1.70E-02	WSDOH, 1995
Nickel	2.06E+01	9.00E-01	1.85E+01	EPA, 1999		0.00E+00		5.40E-02	1.11E+00	Max value from Calcasieu RI
Pyrene	2.65E-02	1.61E+00	4.27E-02	EPA, 1999		0.00E+00		6.60E-01	1.75E-02	WSDOH, 1995
LPAH		1.61E+00	0.00E+00	EPA, 1999						
HPAH	4.23E-01	1.61E+00	6.81E-01	EPA, 1999	3.27E+00	1.38E+00	max PAH	6.60E-01	2.79E-01	WSDOH, 1995
TOTAL PAHs	4.23E-01	1.61E+00	6.81E-01	EPA, 1999	3.27E+00	1.38E+00	max PAH	6.60E-01	2.79E-01	WSDOH, 1995

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE J-1-1
EXPOSURE POINT CONCENTRATION (mg/kg)
SOIL SOUTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
4,4-DDD	0.00766		0.0498	97.5% Chebyshev
Aroclor-1254	0.205		0.74	97.5% Chebyshev
Copper	24.26		46.92	97.5% Chebyshev
Lead	53.52		104	97.5% Chebyshev
Zinc	433.8		815.2	97.5% Chebyshev

TABLE J-1-2
EXPOSURE POINT CONCENTRATION (mg/kg)
SURFACE SOIL SOUTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
4,4-DDD	7.89E-04		0.0029	97.5% Chebyshev
Aroclor-1254	0.137		0.726	97.5% Chebyshev
Copper	27.98		32.45	95% H-UCL
Lead	69.61		84.5	95% H-UCL
Zinc	601.2		727.7	95% Approx. Gamma

Notes:

NS - Not sampled in surface soil.

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
4,4-DDD	0.43	EPA, 2007a	Acute median LC50 in common cricket (dose 4.3 with uncertainty factor of 0.1)	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.147	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227		Avian TRV was used as a surrogate for the rat snake since no TRV was found specific for reptiles.	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Aroclor-1254	2.51	EPA, 1999	Acute median LC50 in earthworms (dose 251 with uncertainty factor of 0.01)	0.68	Sample, 1996	Chronic LOAEL for reproduction in mouse	0.68	Sample, 1996	Chronic LOAEL for reproduction in mouse	0.68	Sample, 1996		0.68	Sample, 1996		0.68	Sample, 1996	
Copper	80	EPA, 2007c	Geometric mean of the MATC and EC10 values for six test species under different test species	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	5.6	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05		Avian TRV	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	4.05	EPA, 2007c	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Lead	1700	EPA, 2005e	Geometric mean of MATC values for one test species under different pH	80	Sample, 1996	LOAEL	80	Sample, 1996	LOAEL	80	Sample, 1996	LOAEL	80	Sample, 1996	LOAEL	80	Sample, 1996	LOAEL
Zinc	537.998	EPA, 2007e	Geometric mean of the MATC for reproduction for two different test species	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL

Notes:

EPA, 2007c -- Copper
EPA, 2007e -- Zinc
EPA, 2005e -- Lead

**TABLE J-1-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
EARTHWORM**

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
4,4-DDD	7.66E-03	4.98E-02	4.30E-01	1.78E-02	1.16E-01
Aroclor-1254	2.05E-01	7.40E-01	2.51E+00	8.17E-02	2.95E-01
Copper	2.43E+01	4.69E+01	8.00E+01	3.03E-01	5.87E-01
Lead	5.35E+01	1.04E+02	1.70E+03	3.15E-02	6.12E-02
Zinc	4.34E+02	8.15E+02	5.38E+02	8.06E-01	1.52E+00

**TABLE J-1-5
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE**

SOIL INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated		EPA, 1999 (normalized for bw)		
Sc	Soil concentration (mg/kg)	see data page				
IR	Ingestion rate of soil (kg/day)	2.13E-05				
AF	Chemical Bioavailability in soil (unitless)	1				
AUF	Area Use Factor	1				
BW	Body weight (kg)	1.48E-02		EPA, 1999		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
4,4-DDD	7.66E-03	4.98E-02	1.10E-05	7.17E-05		
Aroclor-1254	2.05E-01	7.40E-01	2.95E-04	1.07E-03		
Copper	2.43E+01	4.69E+01	3.49E-02	6.75E-02		
Lead	5.35E+01	1.04E+02	7.70E-02	1.50E-01		
Zinc	4.34E+02	8.15E+02	6.24E-01	1.17E+00		
FOOD INGESTION						
INTAKE = ((Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated		EPA, 1999 (normalized for bw)		
Ca	Arthropod concentration (mg/kg)	see FoodConc page				
Cp	Plant concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	8.87E-03				
Dfa	Dietary fraction of arthropods (unitless)	5.60E-01				
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)	4.40E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.48E-02		EPA, 1999		
Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
4,4-DDD	9.65E-03	6.27E-02	7.18E-05	4.67E-04	3.26E-03	2.12E-02
Aroclor-1254	2.32E-01	8.36E-01	2.05E-03	7.40E-03	7.83E-02	2.83E-01
Copper	9.70E-01	1.88E+00	9.70E+00	1.88E+01	2.88E+00	5.58E+00
Lead	1.61E+00	3.12E+00	2.41E+00	4.68E+00	1.17E+00	2.28E+00
Zinc	2.43E+02	4.57E+02	5.21E-10	9.78E-10	8.15E+01	1.53E+02
TOTAL INTAKE						
INTAKE = Soil Intake + Food Intake						
					TOTAL Average Intake	TOTAL RME Intake
Chemical						
4,4-DDD					3.27E-03	2.13E-02
Aroclor-1254					7.86E-02	2.84E-01
Copper					2.92E+00	5.65E+00
Lead					1.25E+00	2.43E+00
Zinc					8.22E+01	1.54E+02

TABLE J-1-6
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
COYOTE

FOOD INGESTION						
$\text{INTAKE} = ((C_m * IR * D_{fm} * AUF) / (BW)) + (C_b * IR * D_{fb} * AUF) / (BW)$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
C _m	Mammal concentration (mg/kg)	see FoodConc page				
C _b	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
D _{fm}	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
D _{fb}	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
4,4-DDD	2.09E-04	1.36E-03	1.26E-04	8.17E-04	1.88E-05	1.22E-04
Aroclor-1254	4.99E-03	1.80E-02	3.00E-03	1.08E-02	4.50E-04	1.62E-03
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	9.66E-03	1.88E-02	0.00E+00	0.00E+00	7.24E-04	1.41E-03
Zinc	2.34E-02	4.40E-02	1.74E+00	3.27E+00	4.53E-02	8.51E-02

**TABLE J-1-7
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition					Value		Reference
Intake	Intake of chemical (mg/kg-day)					calculated		
Sc	Soil concentration (mg/kg)					see data page		
IR	Ingestion rate of soil (kg/day)					1.45E-04		EPA, 1993 *
AF	Chemical Bioavailability in soil (unitless)					1		EPA, 1997
AUF	Area Use Factor					1		EPA, 1997
BW	Body weight (kg)					1.39E-01		EPA, 1993
Chemical	Average Sc		RME Sc		Average Intake		RME Intake	
4,4-DDD	7.66E-03		4.98E-02		7.97E-06		5.18E-05	
Aroclor-1254	2.05E-01		7.40E-01		2.13E-04		7.70E-04	
Copper	2.43E+01		4.69E+01		2.52E-02		4.88E-02	
Lead	5.35E+01		1.04E+02		5.57E-02		1.08E-01	
Zinc	4.34E+02		8.15E+02		4.51E-01		8.48E-01	
FOOD INGESTION								
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))								
Parameter	Definition					Value		Reference
Intake	Intake of chemical (mg/kg-day)					calculated		
Cb	Bird concentration (mg/kg)					see FoodConc page		
Ca	Arthropod concentration (mg/kg)					see FoodConc page		
Cm	Mammal concentration (mg/kg)					see FoodConc page		
IR	Ingestion rate of food (kg/day)					2.78E-03		EPA, 1993 (normalized for bw)
Dfb	Dietary fraction of birds (unitless)					1.80E-01		EPA, 1993
Dfa	Dietary fraction of arthropods (unitless)					2.00E-01		EPA, 1993
Dfm	Dietary fraction of small mammals (unitless)					6.20E-01		EPA, 1993
AUF	Area Use Factor					1		EPA, 1997
BW	Body weight (kg)					1.39E-01		EPA, 1993
Chemical	Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake
4,4-DDD	1.26E-04	8.17E-04	9.65E-03	6.27E-02	2.09E-04	1.36E-03	4.16E-05	2.71E-04
Aroclor-1254	3.00E-03	1.08E-02	2.32E-01	8.36E-01	4.99E-03	1.80E-02	9.99E-04	3.61E-03
Copper	0.00E+00	0.00E+00	9.70E-01	1.88E+00	0.00E+00	0.00E+00	3.88E-03	7.51E-03
Lead	0.00E+00	0.00E+00	1.61E+00	3.12E+00	9.66E-03	1.88E-02	6.54E-03	1.27E-02
Zinc	1.74E+00	3.27E+00	2.43E+02	4.57E+02	2.34E-02	4.40E-02	9.78E-01	1.84E+00
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
							TOTAL Average Intake	TOTAL RME Intake
Chemical								
4,4-DDD							4.96E-05	3.23E-04
Aroclor-1254							1.21E-03	4.38E-03
Copper							2.91E-02	5.63E-02
Lead							6.22E-02	1.21E-01
Zinc							1.43E+00	2.69E+00

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

**TABLE J-1-8
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN**

SOIL INGESTION									
INTAKE = (Sc * IR * AF * AUF) / (BW)									
Parameter	Definition						Value	Reference	
Intake	Intake of chemical (mg/kg-day)						calculated		
Sc	Soil concentration (mg/kg)						see data page		
IR	Ingestion rate of soil (kg/day)						1.14E-03	EPA, 1999 (normalized for bw)	
AF	Chemical Bioavailability in soil (unitless)						1	EPA, 1997	
AUF	Area Use Factor						1	EPA, 1997	
BW	Body weight (kg)						8.00E-02	EPA, 1999	
Chemical	Average Sc		RME Sc		Average Intake		RME Intake		
4,4-DDD	7.89E-04		2.90E-03		1.12E-05		4.13E-05		
Aroclor-1254	1.37E-01		7.26E-01		1.95E-03		1.03E-02		
Copper	2.80E+01		3.25E+01		3.99E-01		4.62E-01		
Lead	6.96E+01		8.45E+01		9.92E-01		1.20E+00		
Zinc	6.01E+02		7.28E+02		8.57E+00		1.04E+01		
FOOD INGESTION									
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))									
Parameter	Definition						Value	Reference	
Intake	Intake of chemical (mg/kg-day)						calculated		
Ce	Earthworm concentration (mg/kg)						see FoodConc page		
Ca	Arthropod concentration (mg/kg)						see FoodConc page		
Cp	Plant concentration (mg/kg)						see FoodConc page		
IR	Ingestion rate of of food (kg/day)						3.52E-02	EPA, 1999 (normalized for bw)	
Dfe	Dietary fraction of earthworms (unitless)						4.60E-01	EPA, 1993	
Dfa	Dietary fraction of arthropods (unitless)						4.60E-01	EPA, 1993	
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)						8.00E-02	EPA, 1993	
AUF	Area Use Factor						1	EPA, 1997	
BW	Body weight (kg)						8.00E-02	EPA, 1999	
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake	
4,4-DDD	9.65E-03	6.27E-02	9.65E-03	6.27E-02	7.18E-05	4.67E-04	3.91E-03	2.54E-02	
Aroclor-1254	2.32E-01	8.36E-01	2.32E-01	8.36E-01	2.05E-03	7.40E-03	9.38E-02	3.39E-01	
Copper	9.70E-01	1.88E+00	9.70E-01	1.88E+00	9.70E+00	1.88E+01	7.34E-01	1.42E+00	
Lead	1.61E+00	3.12E+00	1.61E+00	3.12E+00	2.41E+00	4.68E+00	7.35E-01	1.43E+00	
Zinc	2.43E+02	4.57E+02	2.43E+02	4.57E+02	5.21E-10	9.78E-10	9.83E+01	1.85E+02	
TOTAL INTAKE									
INTAKE = Soil Intake + Food Intake									
							TOTAL Average Intake	TOTAL RME Intake	
Chemical									
4,4-DDD							3.92E-03	2.55E-02	
Aroclor-1254							9.58E-02	3.49E-01	
Copper							1.13E+00	1.88E+00	
Lead							1.73E+00	2.63E+00	
Zinc							1.07E+02	1.95E+02	

TABLE J-1-9
INTAKE CALCULATIONS FOR SOIL SOUTH OF MARLIN
RED-TAILED HAWK

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * DFb * AUF) / (BW))						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01			EPA, 1999 (normalized for bw)	
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01			EPA, 1993	
DFb	Dietary fraction of birds (unitless)	2.15E-01			EPA, 1993	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	9.60E-01			EPA, 1999	
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
4,4-DDD	2.09E-04	1.36E-03	1.26E-04	8.17E-04	3.53E-05	2.30E-04
Aroclor-1254	4.99E-03	1.80E-02	3.00E-03	1.08E-02	8.45E-04	3.05E-03
Copper	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	9.66E-03	1.88E-02	0.00E+00	0.00E+00	1.40E-03	2.73E-03
Zinc	2.34E-02	4.40E-02	1.74E+00	3.27E+00	7.27E-02	1.37E-01

TABLE J-1-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
DEER MOUSE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
4,4-DDD	3.27E-03	2.13E-02	1.47E-01	2.22E-02	1.45E-01
Aroclor-1254	7.86E-02	2.84E-01	6.80E-01	1.16E-01	4.17E-01
Copper	2.92E+00	5.65E+00	5.60E+00	5.21E-01	1.01E+00
Lead	1.25E+00	2.43E+00	8.00E+01	1.56E-02	3.04E-02
Zinc	8.22E+01	1.54E+02	3.20E+02	2.57E-01	4.82E-01

TABLE J-1-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
COYOTE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
4,4-DDD	1.88E-05	1.22E-04	1.47E-01	1.28E-04	8.32E-04
Aroclor-1254	4.50E-04	1.62E-03	6.80E-01	6.61E-04	2.39E-03
Copper	0.00E+00	0.00E+00	5.60E+00	0.00E+00	0.00E+00
Lead	7.24E-04	1.41E-03	8.00E+01	9.05E-06	1.76E-05
Zinc	4.53E-02	8.51E-02	3.20E+02	1.42E-04	2.66E-04

TABLE J-1-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
4,4-DDD	4.96E-05	3.23E-04	2.27E-01	2.19E-04	1.42E-03
Aroclor-1254	#REF!	#REF!	6.80E-01	#REF!	#REF!
Copper	2.91E-02	5.63E-02	4.05E+00	7.19E-03	1.39E-02
Lead	6.22E-02	1.21E-01	8.00E+01	7.78E-04	1.51E-03
Zinc	1.43E+00	2.69E+00	3.20E+02	4.47E-03	8.39E-03

TABLE J-1-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
AMERICAN ROBIN

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
4,4-DDD	3.92E-03	2.55E-02	2.27E-01	1.73E-02	1.12E-01
Aroclor-1254	9.58E-02	3.49E-01	6.80E-01	1.41E-01	5.13E-01
Copper	1.13E+00	1.88E+00	4.05E+00	2.80E-01	4.65E-01
Lead	1.73E+00	2.63E+00	8.00E+01	2.16E-02	3.29E-02
Zinc	1.07E+02	1.95E+02	3.20E+02	3.34E-01	6.10E-01

TABLE J-1-14
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL SOUTH OF MARLIN
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
4,4-DDD	3.53E-05	2.30E-04	2.27E-01	1.56E-04	1.01E-03
Aroclor-1254	8.45E-04	3.05E-03	6.80E-01	1.24E-03	4.48E-03
Copper	0.00E+00	0.00E+00	4.05E+00	0.00E+00	0.00E+00
Lead	1.40E-03	2.73E-03	8.00E+01	1.75E-05	3.41E-05
Zinc	7.27E-02	1.37E-01	3.20E+02	2.27E-04	4.27E-04

TABLE J-1-15
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
SURFACE SOIL SOUTH OF MARLIN AVE.

Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
4,4-DDD	7.66E-03	1.26E+00	9.65E-03	EPA, 1999	1.26E+00	9.65E-03	EPA, 1999	9.37E-03	7.18E-05	EPA, 1999	2.72E-02	2.08E-04	EPA, 1999	6.52E-05	4.99E-07	EPA, 1999	2.09E-04	1.59E-02	1.22E-04	EPA, 1999	5.10E-04	3.91E-06	EPA, 1999	1.26E-04
Aroclor-1254	2.05E-01	1.13E+00	2.32E-01	EPA, 1999	1.13E+00	2.32E-01	EPA, 1999	1.00E-02	2.05E-03	EPA, 1999	2.43E-02	4.98E-03	EPA, 1999	5.83E-05	1.20E-05	EPA, 1999	4.99E-03	1.42E-02	2.91E-03	EPA, 1999	4.55E-04	9.33E-05	EPA, 1999	3.00E-03
Copper	2.43E+01	4.00E-02	9.70E-01	EPA, 1999	4.00E-02	9.70E-01	EPA, 1999	4.00E-01	9.70E+00	EPA, 1999		0.00E+00			0.00E+00		0.00E+00		0.00E+00			0.00E+00		0.00E+00
Lead	5.35E+01	3.00E-02	1.61E+00	EPA, 1999	3.00E-02	1.61E+00	EPA, 1999	4.50E-02	2.41E+00	EPA, 1999	1.80E-04	9.63E-03	EPA, 1999	4.32E-07	2.31E-05	EPA, 1999	9.66E-03		0.00E+00			0.00E+00		0.00E+00
Zinc	4.34E+02	5.60E-01	2.43E+02	EPA, 1999	5.60E-01	2.43E+02	EPA, 1999	1.20E-12	5.21E-10	EPA, 1999	5.39E-05	2.34E-02	EPA, 1999	1.29E-07	5.60E-05	EPA, 1999	2.34E-02	3.89E-03	1.69E+00	EPA, 1999	1.25E-04	5.42E-02	EPA, 1999	1.74E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007c -- Copper
EPA, 2007e -- Zinc
EPA, 2005e -- Lead

TABLE J-1-16
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
SURFACE SOIL SOUTH OF MARLIN AVE.

Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
4,4-DDD	4.98E-02	1.26E+00	6.27E-02 EPA, 1999		1.26E+00	6.27E-02 EPA, 1999		9.37E-03	4.67E-04 EPA, 1999		2.72E-02	1.35E-03 EPA, 1999		6.52E-05	3.25E-06 EPA, 1999		1.36E-03	1.59E-02	7.92E-04 EPA, 1999		5.10E-04	2.54E-05 EPA, 1999		8.17E-04
Aroclor-1254	7.40E-01	1.13E+00	8.36E-01 EPA, 1999		1.13E+00	8.36E-01 EPA, 1999		1.00E-02	7.40E-03 EPA, 1999		2.43E-02	1.80E-02 EPA, 1999		5.83E-05	4.31E-05 EPA, 1999		1.80E-02	1.42E-02	1.05E-02 EPA, 1999		4.55E-04	3.37E-04 EPA, 1999		1.08E-02
Copper	4.69E+01	4.00E-02	1.88E+00 EPA, 1999		4.00E-02	1.88E+00 EPA, 1999		4.00E-01	1.88E+01 EPA, 1999			0.00E+00			0.00E+00		0.00E+00					0.00E+00		0.00E+00
Lead	1.04E+02	3.00E-02	3.12E+00 EPA, 1999		3.00E-02	3.12E+00 EPA, 1999		4.50E-02	4.68E+00 EPA, 1999		1.80E-04	1.87E-02 EPA, 1999		4.32E-07	4.49E-05 EPA, 1999		1.88E-02		0.00E+00			0.00E+00		0.00E+00
Zinc	8.15E+02	5.60E-01	4.57E+02 EPA, 1999		5.60E-01	4.57E+02 EPA, 1999		1.20E-12	9.78E-10 EPA, 1999		5.39E-05	4.39E-02 EPA, 1999		1.29E-07	1.05E-04 EPA, 1999		4.40E-02	3.89E-03	3.17E+00 EPA, 1999		1.25E-04	1.02E-01 EPA, 1999		3.27E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007c -- Copper
EPA, 2007e -- Zinc
EPA, 2005e -- Lead

TABLE J-2-1
EXPOSURE POINT CONCENTRATION (mg/kg)
SOIL NORTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
Dieldrin				NC

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

NC - Not a COPC in soil.

TABLE J-2-2
EXPOSURE POINT CONCENTRATION (mg/kg)
SURFACE SOIL NORTH OF MARLIN AVE.

Parameter	Average		95% UCL	Statistic Used
Dieldrin	4.87E-04		0.0034	99% Chebyshev

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

NS - Not sampled in surface soil.

TABLE J-2-3
TOXICITY REFERENCE VALUES -- SEVERAL BASED ON LOAELS
SURFACE SOIL NORTH OF MARLIN AVE.

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
Dieldrin				1.8	EPA, 2005f	Geometric mean of LOAEL values for survival, reproduction and growth	1.8	EPA, 2005f	Geometric mean of LOAEL values for survival, reproduction and growth	0.0709		Avian TRV	0.0709	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth,	0.0709	EPA, 2005f	Highest bounded NOAEL for growth lower than the lowest bounded LOAEL for reproduction, growth,

Notes:

- EPA, 2007a -- DDT
- EPA, 2007b -- PAHs
- EPA, 2007c -- Copper
- EPA, 2007d -- Nickel
- EPA, 2007e -- Zinc
- EPA, 2007f -- Dieldrin
- EPA, 2005a -- Antimony
- EPA, 2005b -- Cadmium
- EPA, 2005c -- Chromium
- EPA, 2005d -- Vanadium
- EPA, 2005e -- Lead

**TABLE J-2-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
EARTHWORM**

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
Dieldrin	0.00E+00	0.00E+00			

**TABLE J-2-5
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE**

SOIL INGESTION						
INTAKE = (Sc * IR * AF * AUF) / (BW)						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated		EPA, 1999 (normalized for bw)		
Sc	Soil concentration (mg/kg)	see data page				
IR	Ingestion rate of soil (kg/day)	2.13E-05				
AF	Chemical Bioavailability in soil (unitless)	1				
AUF	Area Use Factor	1				
BW	Body weight (kg)	1.48E-02		EPA, 1999		
Chemical	Average Sc	RME Sc	Average Intake	RME Intake		
Dieldrin	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
FOOD INGESTION						
INTAKE = ((Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated		EPA, 1999 (normalized for bw)		
Ca	Arthropod concentration (mg/kg)	see FoodConc page				
Cp	Plant concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	8.87E-03				
DFa	Dietary fraction of arthropods (unitless)	5.60E-01				
DFs	Dietary fraction of plants, seeds and other vegetation (unitless)	4.40E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.48E-02		EPA, 1999		
Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
Dieldrin	7.15E-03	5.00E-02	1.70E-05	1.19E-04	2.41E-03	1.68E-02
TOTAL INTAKE						
INTAKE = Soil Intake + Food Intake						
					TOTAL Average Intake	TOTAL RME Intake
Chemical						
Dieldrin					2.41E-03	1.68E-02

TABLE J-2-6
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
COYOTE

FOOD INGESTION						
$\text{INTAKE} = ((C_m * IR * D_{fm} * AUF) / (BW)) + (C_b * IR * D_{fb} * AUF) / (BW)$						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
C _m	Mammal concentration (mg/kg)	see FoodConc page				
C _b	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
D _{fm}	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
D _{fb}	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Dieldrin	2.75E-06	1.92E-05	1.79E-06	1.25E-05	2.51E-07	1.75E-06

**TABLE J-2-7
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
RAT SNAKE**

SOIL INGESTION									
INTAKE = (Sc * IR * AF * AUF) / (BW)									
Parameter	Definition					Value		Reference	
Intake	Intake of chemical (mg/kg-day)					calculated			
Sc	Soil concentration (mg/kg)					see data page			
IR	Ingestion rate of soil (kg/day)					1.45E-04		EPA, 1993 *	
AF	Chemical Bioavailability in soil (unitless)					1		EPA, 1997	
AUF	Area Use Factor					1		EPA, 1997	
BW	Body weight (kg)					1.39E-01		EPA, 1993	
Chemical	Average Sc				RME Sc		Average Intake		RME Intake
Dieldrin	0.00E+00				0.00E+00		0.00E+00		0.00E+00
FOOD INGESTION									
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))									
Parameter	Definition					Value		Reference	
Intake	Intake of chemical (mg/kg-day)					calculated			
Cb	Bird concentration (mg/kg)					see FoodConc page			
Ca	Arthropod concentration (mg/kg)					see FoodConc page			
Cm	Mammal concentration (mg/kg)					see FoodConc page			
IR	Ingestion rate of of food (kg/day)					2.78E-03		EPA, 1993 (normalized for bw)	
Dfb	Dietary fraction of birds (unitless)					1.80E-01		EPA, 1993	
Dfa	Dietary fraction of arthropods (unitless)					2.00E-01		EPA, 1993	
Dfm	Dietary fraction of small mammals (unitless)					6.20E-01		EPA, 1993	
AUF	Area Use Factor					1		EPA, 1997	
BW	Body weight (kg)					1.39E-01		EPA, 1993	
Chemical	Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake	
Dieldrin	1.79E-06	1.25E-05	7.15E-03	5.00E-02	2.75E-06	1.92E-05	2.87E-05	2.00E-04	
TOTAL INTAKE									
INTAKE = Soil Intake + Food Intake									
							TOTAL Average Intake	TOTAL RME Intake	
Chemical									
Dieldrin							2.87E-05	2.00E-04	

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

TABLE J-2-8
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
AMERICAN ROBIN

SOIL INGESTION									
INTAKE = (Sc * IR * AF * AUF) / (BW)									
Parameter	Definition					Value		Reference	
Intake	Intake of chemical (mg/kg-day)					calculated			
Sc	Soil concentration (mg/kg)					see data page			
IR	Ingestion rate of soil (kg/day)					1.14E-03		EPA, 1999 (normalized for bw)	
AF	Chemical Bioavailability in soil (unitless)					1		EPA, 1997	
AUF	Area Use Factor					1		EPA, 1997	
BW	Body weight (kg)					8.00E-02		EPA, 1999	
Chemical	Average Sc				RME Sc		Average Intake		RME Intake
Dieldrin	4.87E-04				3.40E-03		6.93E-06		4.85E-05
FOOD INGESTION									
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))									
Parameter	Definition					Value		Reference	
Intake	Intake of chemical (mg/kg-day)					calculated			
Ce	Earthworm concentration (mg/kg)					see FoodConc page			
Ca	Arthropod concentration (mg/kg)					see FoodConc page			
Cp	Plant concentration (mg/kg)					see FoodConc page			
IR	Ingestion rate of food (kg/day)					3.52E-02		EPA, 1999 (normalized for bw)	
Dfe	Dietary fraction of earthworms (unitless)					4.60E-01		EPA, 1993	
Dfa	Dietary fraction of arthropods (unitless)					4.60E-01		EPA, 1993	
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)					8.00E-02		EPA, 1993	
AUF	Area Use Factor					1		EPA, 1997	
BW	Body weight (kg)					8.00E-02		EPA, 1999	
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake	
Dieldrin	7.15E-03	5.00E-02	7.15E-03	5.00E-02	1.70E-05	1.19E-04	2.90E-03	2.02E-02	
TOTAL INTAKE									
INTAKE = Soil Intake + Food Intake									
							TOTAL Average Intake	TOTAL RME Intake	
Chemical									
Dieldrin							2.90E-03	2.03E-02	

TABLE J-2-9
INTAKE CALCULATIONS FOR SOIL NORTH OF MARLIN
RED-TAILED HAWK

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * Dfb * AUF) / (BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01		EPA, 1999 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01		EPA, 1993		
Dfb	Dietary fraction of birds (unitless)	2.15E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	9.60E-01		EPA, 1999		
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Dieldrin	2.75E-06	1.92E-05	1.79E-06	1.25E-05	4.70E-07	3.29E-06

TABLE J-2-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
DEER MOUSE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
Dieldrin	2.41E-03	1.68E-02	1.80E+00	1.34E-03	9.34E-03

**TABLE J-2-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
COYOTE**

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
Dieldrin	2.51E-07	1.75E-06	1.80E+00	1.39E-07	9.74E-07

TABLE J-2-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
Dieldrin	2.87E-05	2.00E-04	7.09E-02	4.04E-04	2.82E-03

TABLE J-2-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
AMERICAN ROBIN

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
Dieldrin	2.90E-03	2.03E-02	7.09E-02	4.09E-02	2.86E-01

TABLE J-2-14
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR SOIL NORTH OF MARLIN
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
Dieldrin	4.70E-07	3.29E-06	7.09E-02	6.64E-06	4.64E-05

TABLE J-2-15
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
SURFACE SOIL NORTH OF MARLIN AVE.

Food = Csoil x BCF (or BAF)																								
where:																								
Cfood =		Chemical Concentration in food (mg/kg dry)																						
Csoil =		Chemical Concentration in soil (mg/kg dry)																						
BCF =		Bioconcentration Factor (unitless)																						
BAF =		Bioaccumulation Factor (unitless)																						
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Dieldrin	4.87E-04	1.47E+01	7.15E-03	EPA, 2005f	1.47E+01	7.15E-03	EPA, 2005f	3.49E-02	1.70E-05	EPA, 1998	5.65E-03	2.75E-06	EPA, 1998		0.00E+00		2.75E-06	3.68E-03	1.79E-06	EPA, 1998		0.00E+00		1.79E-06

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE J-1-16 RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg) SURFACE SOIL NORTH OF MARLIN AVE.																								
Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood = Chemical Concentration in food (mg/kg dry)																								
Csoil = Chemical Concentration in soil (mg/kg dry)																								
BCF = Bioconcentration Factor (unitless)																								
BAF = Bioaccumulation Factor (unitless)																								
Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Dieldrin	3.40E-03	1.47E+01	5.00E-02	EPA, 2005f	1.47E+01	5.00E-02	EPA, 2005f	3.49E-02	1.19E-04	EPA, 1998	5.65E-03	1.92E-05	EPA, 1998		0.00E+00		1.92E-05	3.68E-03	1.25E-05	EPA, 1998		0.00E+00		1.25E-05

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE J-3-1
EXPOSURE POINT CONCENTRATION (mg/kg)
BACKGROUND SOIL

Parameter	Average		95% UCL	Statistic Used
Antimony	0.953		2.19	Maximum*
Barium	333.1		502.3	95% Approx. Gamma
Zinc	247		969	Maximum*

Notes:

* Recommended UCL exceeds maximum observation so the maximum measured concentration was used as the EPC.

TABLE J-3-2
TOXICITY REFERENCE VALUES -- SEVERAL BASED ON LOAELS
BACKGROUND SOIL

Parameter	Earthworm (mg/kg)	Ref.	Comments	Deer Mouse (mg/kgBW-day)	Ref.	Comments	Coyote (mg/kgBW-day)	Ref.	Comments	Rat Snake (mg/kgBW-day)	Ref.	Comments	American Robin (mg/kgBW-day)	Ref.	Comments	Red-tailed Hawk (mg/kgBW-day)	Ref.	Comments
Antimony	30	EPA, 2005a	EC20 for earthworms	1.25	Sample, 1996	Chronic LOAEL in mouse	1.25	Sample, 1996	Chronic LOAEL in mouse	1.25		Mammalian TRV	1.25		Mammalian TRV	1.25		Mammalian TRV
Barium	330	EPA, 2005g	Geometric mean of the EC20 values for three test species under three separate test conditions of pH	118.95	EPA, 2005g	Geometric mean of LOAEL values for survival, reproduction and growth	118.95	EPA, 2005g	Geometric mean of LOAEL values for survival, reproduction and growth	118.95		Mammalian TRV	118.95		Mammalian TRV	118.95		Mammalian TRV
Zinc	537.998	EPA, 2007e	Geometric mean of the MATC for reproduction for two different test species	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL	320	Sample, 1996	LOAEL

Notes:

EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005g -- Barium

TABLE J-3-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
EARTHWORM

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV (earthworm)	Average EHQ	RME EHQ
Antimony	9.53E-01	2.19E+00	3.00E+01	3.18E-02	7.30E-02
Barium	3.33E+02	5.02E+02	3.30E+02	1.01E+00	1.52E+00
Zinc	2.47E+02	9.69E+02	5.38E+02	4.59E-01	1.80E+00

TABLE J-3-4
INTAKE CALCULATIONS FOR BACKGROUND SOIL
DEER MOUSE

SOIL INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Soil concentration (mg/kg)	see data page		
IR	Ingestion rate of soil (kg/day)	2.13E-05		EPA, 1999 (normalized for bw)
AF	Chemical Bioavailability in soil (unitless)	1		EPA, 1997
AUF	Area Use Factor	1		EPA, 1997
BW	Body weight (kg)	1.48E-02		EPA, 1999
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
Antimony	9.53E-01	2.19E+00	1.37E-03	3.15E-03
Barium	3.33E+02	5.02E+02	4.79E-01	7.23E-01
Zinc	2.47E+02	9.69E+02	3.55E-01	1.39E+00
FOOD INGESTION				
INTAKE = ((Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs * AUF)/(BW))				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Ca	Arthropod concentration (mg/kg)	see FoodConc page		
Cp	Plant concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	8.87E-03		EPA, 1999 (normalized for bw)
Dfa	Dietary fraction of arthropods (unitless)	5.60E-01		EPA, 1993
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)	4.40E-01		EPA, 1993
AUF	Area Use Factor	1		EPA, 1997
BW	Body weight (kg)	1.48E-02		EPA, 1999
Chemical	Average Arthropod	RME Arthropod	Average Plant	RME Plant
Antimony	2.10E-01	4.82E-01	1.91E-01	4.38E-01
Barium	7.33E+01	1.11E+02	5.00E+01	7.53E+01
Zinc	1.38E+02	5.43E+02	2.96E-10	1.16E-09
TOTAL INTAKE				
INTAKE = Soil Intake + Food Intake				
Chemical	TOTAL Average Intake		TOTAL RME Intake	
Antimony	1.22E-01		2.80E-01	
Barium	3.83E+01		5.77E+01	
Zinc	4.68E+01		1.84E+02	

**TABLE J-3-5
INTAKE CALCULATIONS FOR BACKGROUND SOIL
COYOTE**

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * Dfb * AUF) / (BW))						
Parameter	Definition	Value		Reference		
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.55E+00		EPA, 1993 (normalized for bw)		
Dfm	Dietary fraction of small mammals (unitless)	7.50E-01		EPA, 1993		
Dfb	Dietary fraction of birds (unitless)	2.50E-01		EPA, 1993		
AUF	Area Use Factor	1		EPA, 1997		
BW	Body weight (kg)	1.55E+01		EPA, 1993		
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Antimony	5.72E-04	1.31E-03	0.00E+00	0.00E+00	4.29E-05	9.86E-05
Barium	3.00E-02	4.53E-02	0.00E+00	0.00E+00	2.25E-03	3.39E-03
Zinc	1.33E-02	5.24E-02	9.92E-01	3.89E+00	2.58E-02	1.01E-01

**TABLE J-3-6
INTAKE CALCULATIONS FOR BACKGROUND SOIL
RAT SNAKE**

SOIL INGESTION									
INTAKE = (Sc * IR * AF * AUF) / (BW)									
Parameter		Definition				Value		Reference	
Intake		Intake of chemical (mg/kg-day)				calculated			
Sc		Soil concentration (mg/kg)				see data page			
IR		Ingestion rate of soil (kg/day)				1.45E-04		EPA, 1993 *	
AF		Chemical Bioavailability in soil (unitless)				1		EPA, 1997	
AUF		Area Use Factor				1		EPA, 1997	
BW		Body weight (kg)				1.39E-01		EPA, 1993	
Chemical		Average Sc		RME Sc		Average Intake		RME Intake	
Antimony		9.53E-01		2.19E+00		9.91E-04		2.28E-03	
Barium		3.33E+02		5.02E+02		3.46E-01		5.22E-01	
Zinc		2.47E+02		9.69E+02		2.57E-01		1.01E+00	
FOOD INGESTION									
INTAKE = ((Cb * IR * Dfb * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cm * IR * DFm *AUF)/(BW))									
Parameter		Definition				Value		Reference	
Intake		Intake of chemical (mg/kg-day)				calculated			
Cb		Bird concentration (mg/kg)				see FoodConc page			
Ca		Arthropod concentration (mg/kg)				see FoodConc page			
Cm		Mammal concentration (mg/kg)				see FoodConc page			
IR		Ingestion rate of food (kg/day)				2.78E-03		EPA, 1993 (normalized for bw)	
Dfb		Dietary fraction of birds (unitless)				1.80E-01		EPA, 1993	
Dfa		Dietary fraction of arthropods (unitless)				2.00E-01		EPA, 1993	
DFm		Dietary fraction of small mammals (unitless)				6.20E-01		EPA, 1993	
AUF		Area Use Factor				1		EPA, 1997	
BW		Body weight (kg)				1.39E-01		EPA, 1993	
Chemical		Average Bird	RME Bird	Average Arthropod	RME Arthropod	Average Mammal	RME Mammal	Average Intake	RME Intake
Antimony		0.00E+00	0.00E+00	2.10E-01	4.82E-01	5.72E-04	1.31E-03	8.46E-04	1.94E-03
Barium		0.00E+00	0.00E+00	7.33E+01	1.11E+02	3.00E-02	4.53E-02	2.94E-01	4.43E-01
Zinc		9.92E-01	3.89E+00	1.38E+02	5.43E+02	1.33E-02	5.24E-02	5.57E-01	2.19E+00
TOTAL INTAKE									
INTAKE = Soil Intake + Food Intake									
Chemical								TOTAL Average Intake	TOTAL RME Intake
Antimony								1.84E-03	4.22E-03
Barium								6.40E-01	9.65E-01
Zinc								8.14E-01	3.19E+00

Notes:

* Soil ingestion was assumed to be 5.2% of dietary intake per other reptiles listed in EPA, 1993.

**TABLE J-3-7
INTAKE CALCULATIONS FOR BACKGROUND SOIL
AMERICAN ROBIN**

SOIL INGESTION								
INTAKE = (Sc * IR * AF * AUF) / (BW)								
Parameter	Definition						Value	Reference
Intake	Intake of chemical (mg/kg-day)						calculated	
Sc	Soil concentration (mg/kg)						see data page	
IR	Ingestion rate of soil (kg/day)						1.14E-03	EPA, 1999 (normalized for bw)
AF	Chemical Bioavailability in soil (unitless)						1	EPA, 1997
AUF	Area Use Factor						1	EPA, 1997
BW	Body weight (kg)						8.00E-02	EPA, 1999
Chemical	Average Sc		RME Sc		Average Intake		RME Intake	
Antimony	9.53E-01		2.19E+00		1.36E-02		3.12E-02	
Barium	3.33E+02		5.02E+02		4.75E+00		7.16E+00	
Zinc	2.47E+02		9.69E+02		3.52E+00		1.38E+01	
FOOD INGESTION								
INTAKE = ((Ce * IR * Dfe * AUF)/(BW) + (Ca * IR * DFa * AUF) / (BW) + ((Cp * IR * DFs *AUF)/(BW))								
Parameter	Definition						Value	Reference
Intake	Intake of chemical (mg/kg-day)						calculated	
Ce	Earthworm concentration (mg/kg)						see FoodConc page	
Ca	Arthropod concentration (mg/kg)						see FoodConc page	
Cp	Plant concentration (mg/kg)						see FoodConc page	
IR	Ingestion rate of food (kg/day)						3.52E-02	EPA, 1999 (normalized for bw)
Dfe	Dietary fraction of earthworms (unitless)						4.60E-01	EPA, 1993
Dfa	Dietary fraction of arthropods (unitless)						4.60E-01	EPA, 1993
Dfs	Dietary fraction of plants, seeds and other vegetation (unitless)						8.00E-02	EPA, 1993
AUF	Area Use Factor						1	EPA, 1997
BW	Body weight (kg)						8.00E-02	EPA, 1999
Chemical	Average Earthworm	RME Earthworm	Average Arthropod	RME Arthropod	Average Plant	RME Plant	Average Intake	RME Intake
Antimony	2.10E-01	4.82E-01	2.10E-01	4.82E-01	1.91E-01	4.38E-01	9.16E-02	2.10E-01
Barium	7.33E+01	1.11E+02	7.33E+01	1.11E+02	5.00E+01	7.53E+01	3.14E+01	4.74E+01
Zinc	1.38E+02	5.43E+02	1.38E+02	5.43E+02	2.96E-10	1.16E-09	5.60E+01	2.20E+02
TOTAL INTAKE								
INTAKE = Soil Intake + Food Intake								
							TOTAL Average Intake	TOTAL RME Intake
Chemical								
Antimony							1.05E-01	2.42E-01
Barium							3.62E+01	5.45E+01
Zinc							5.95E+01	2.33E+02

TABLE J-3-8
INTAKE CALCULATIONS FOR BACKGROUND SOIL
RED-TAILED HAWK

FOOD INGESTION						
INTAKE = ((Cm * IR * Dfm * AUF)/(BW) + (Cb * IR * Dfb * AUF) / (BW))						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
Cm	Mammal concentration (mg/kg)	see FoodConc page				
Cb	Bird concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.78E-01			EPA, 1999 (normalized for bw)	
Dfm	Dietary fraction of small mammals (unitless)	7.85E-01			EPA, 1993	
Dfb	Dietary fraction of birds (unitless)	2.15E-01			EPA, 1993	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	9.60E-01			EPA, 1999	
Chemical	Average Mammal	RME Mammal	Average Bird	RME Bird	Average Intake	RME Intake
Antimony	5.72E-04	1.31E-03	0.00E+00	0.00E+00	8.31E-05	1.91E-04
Barium	3.00E-02	4.53E-02	0.00E+00	0.00E+00	4.36E-03	6.57E-03
Zinc	1.33E-02	5.24E-02	9.92E-01	3.89E+00	4.14E-02	1.62E-01

TABLE J-3-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
DEER MOUSE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV (deer mouse)	Average EHQ	RME EHQ
Antimony	1.22E-01	2.80E-01	1.25E+00	9.76E-02	2.24E-01
Barium	3.83E+01	5.77E+01	1.19E+02	3.22E-01	4.85E-01
Zinc	4.68E+01	1.84E+02	3.20E+02	1.46E-01	5.73E-01

TABLE J-3-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
COYOTE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Coyote	Average EHQ	RME EHQ
Antimony	4.29E-05	9.86E-05	1.25E+00	3.43E-05	7.89E-05
Barium	2.25E-03	3.39E-03	1.19E+02	1.89E-05	2.85E-05
Zinc	2.58E-02	1.01E-01	3.20E+02	8.06E-05	3.16E-04

TABLE J-3-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL SOUTH OF MARLIN
RAT SNAKE

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Rat Snake	Average EHQ	RME EHQ
Antimony	1.84E-03	4.22E-03	1.25E+00	1.47E-03	3.38E-03
Barium	6.40E-01	9.65E-01	1.19E+02	5.38E-03	8.11E-03
Zinc	8.14E-01	3.19E+00	3.20E+02	2.54E-03	9.98E-03

TABLE J-3-12
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
AMERICAN ROBIN

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV American Robin	Average EHQ	RME EHQ
Antimony	1.05E-01	2.42E-01	1.25E+00	8.41E-02	1.93E-01
Barium	3.62E+01	5.45E+01	1.19E+02	3.04E-01	4.59E-01
Zinc	5.95E+01	2.33E+02	3.20E+02	1.86E-01	7.30E-01

TABLE J-3-13
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR BACKGROUND SOIL
RED-TAILED HAWK

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition			Default	
Intake	Intake of COPC (mg/kg-day)			see Intake	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Intake	RME Intake	TRV Red-Tailed Hawk	Average EHQ	RME EHQ
Antimony	8.31E-05	1.91E-04	1.25E+00	6.65E-05	1.53E-04
Barium	4.36E-03	6.57E-03	1.19E+02	3.66E-05	5.53E-05
Zinc	4.14E-02	1.62E-01	3.20E+02	1.29E-04	5.07E-04

TABLE J-3-14
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
BACKGROUND SOIL

Cfood = Csoil x BCF (or BAF)																								
where:																								
Cfood =	Chemical Concentration in food (mg/kg dry)																							
Csoil =	Chemical Concentration in soil (mg/kg dry)																							
BCF =	Bioconcentration Factor (unitless)																							
BAF =	Bioaccumulation Factor (unitless)																							
Compound	Average Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Antimony	9.53E-01	2.20E-01	2.10E-01	EPA, 1999	2.20E-01	2.10E-01	EPA, 1999	2.00E-01	1.91E-01	EPA, 1999	5.99E-04	5.71E-04	EPA, 1999	1.44E-06	1.37E-06	EPA, 1999	5.72E-04		0.00E+00			0.00E+00		0.00E+00
Barium	3.33E+02	2.20E-01	7.33E+01	EPA, 1999	2.20E-01	7.33E+01	EPA, 1999	1.50E-01	5.00E+01	EPA, 1999	8.99E-05	2.99E-02	EPA, 1999	2.16E-07	7.19E-05	EPA, 1999	3.00E-02		0.00E+00			0.00E+00		0.00E+00
Zinc	2.47E+02	5.60E-01	1.38E+02	EPA, 1999	5.60E-01	1.38E+02	EPA, 1999	1.20E-12	2.96E-10	EPA, 1999	5.39E-05	1.33E-02	EPA, 1999	1.29E-07	3.19E-05	EPA, 1999	1.33E-02	3.89E-03	9.61E-01	EPA, 1999	1.25E-04	3.09E-02	EPA, 1999	9.92E-01

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony

TABLE J-3-15
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
BACKGROUND SOIL

C_{food} = C_{soil} x BCF (or BAF)

where:

C_{food} = Chemical Concentration in food (mg/kg dry)
C_{soil} = Chemical Concentration in soil (mg/kg dry)
BCF = Bioconcentration Factor (unitless)
BAF = Bioaccumulation Factor (unitless)

Compound	RME Csoil (mg/kg)	Soil to Earthworm BCF	Earthworm Concentration	Reference	Soil to Arthropod BCF	Arthropod Concentration	Reference	Soil to Plant BAF	Plant/Fruit/Seed Concentration	Reference	Plant to Wildlife BCF	Plant to Deer Mouse Concentration	Reference	Soil to Wildlife BCF	Soil to Deer Mouse Concentration	Reference	TOTAL DEER MOUSE CONCENTRATION	Plant to Bird BCF	Plant to Bird Concentration	Reference	Soil to Bird BCF	Soil to Bird Concentration	Reference	TOTAL BIRD CONCENTRATION
Antimony	2.19E+00	2.20E-01	4.82E-01	EPA, 1999	2.20E-01	4.82E-01	EPA, 1999	2.00E-01	4.38E-01	EPA, 1999	5.99E-04	1.31E-03	EPA, 1999	1.44E-06	3.15E-06	EPA, 1999	1.31E-03		0.00E+00			0.00E+00		0.00E+00
Barium	5.02E+02	2.20E-01	1.11E+02	EPA, 1999	2.20E-01	1.11E+02	EPA, 1999	1.50E-01	7.53E+01	EPA, 1999	8.99E-05	4.52E-02	EPA, 1999	2.16E-07	1.08E-04	EPA, 1999	4.53E-02		0.00E+00			0.00E+00		0.00E+00
Zinc	9.69E+02	5.60E-01	5.43E+02	EPA, 1999	5.60E-01	5.43E+02	EPA, 1999	1.20E-12	1.16E-09	EPA, 1999	5.39E-05	5.22E-02	EPA, 1999	1.29E-07	1.25E-04	EPA, 1999	5.24E-02	3.89E-03	3.77E+00	EPA, 1999	1.25E-04	1.21E-01	EPA, 1999	3.89E+00

Notes:
Does not exceed screening criteria but is considered bioaccumulative.
Exceeds screening criteria but is not considered bioaccumulative.
Exceeds screening criteria and is considered bioaccumulative.
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.
EPA, 2007a -- DDT
EPA, 2007b -- PAHs
EPA, 2007c -- Copper
EPA, 2007d -- Nickel
EPA, 2007e -- Zinc
EPA, 2005a -- Antimony
EPA, 2005b -- Cadmium
EPA, 2005c -- Chromium
EPA, 2005d -- Vanadium
EPA, 2005e -- Lead

TABLE J-4-1
EXPOSURE POINT CONCENTRATION (mg/kg)
POND SEDIMENT

Parameter	Average		95% UCL	Statistic Used
4,4'-DDT	4.16E-03		1.57E-03	RME EPC is max detect*
Nickel	1.63E+01		2.06E+01	RME EPC is max detect

Notes:

*The maximum detected value is sometimes lower than the average since the reporting limit was used as a proxy value when it was not detected and because J flag data were used in the risk assessment.

TABLE J-4-2
TOXICITY REFERENCE VALUES - WITH SEVERAL LOAELS
POND SEDIMENT

Parameter	Capitella capitata (mg/kg)	Ref.	Comments	Capitella capitata (mg/kg)	Ref.	Comments	Fiddler Crab (mg/kgBW-day)	Ref.	Comments	Black Drum (mg/kgBW-day)	Ref.	Comments	Spotted seatrout (mg/kgBW-day)	Ref.	Comments	Sandpiper (mg/kgBW-day)	Ref.	Comments	Green heron (mg/kgBW-day)	Ref.	Comments
4,4'-DDT	0.001	SQUIRT	ERL	0.007	SQUIRT	ERM	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.147	EPA, 2007a	mammalian TRV for soil	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival	0.227	EPA, 2007a	Highest bounded NOAEL for growth and reproduction lower than the lowest bounded LOAEL for reproduction, growth, and survival
Nickel	20.9	SQUIRT	ERL	51.6	SQUIRT	ERM	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	1.7	EPA, 2007d	mammalian TRV for soil	21.66	EPA, 2007d	Geometric mean of LOAEL for reproduction, growth, and survival	21.66	EPA, 2007d	Geometric mean of LOAEL for reproduction, growth, and survival

Notes:
ERL -- Effects Range-Low
AET -- Apparent Effects Threshold
TEL -- Threshold Effects Level

EPA, 2007a -- DDT
EPA, 2007d -- Nickel

TABLE J-4-3
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition				Default
Sc	Soil Concentration (mg/kg)				see below
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDT	4.16E-03	1.57E-03	1.00E-03	4.16E+00	1.57E+00
Nickel	1.63E+01	2.06E+01	2.09E+01	7.81E-01	9.86E-01

TABLE J-4-4
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA -- MIDPOINT BETWEEN ERL AND ERM COMPARISON

Ecological Hazard Quotient =		Sc/TRV			
Parameter	Definition				Default
Sc	Soil Concentration (mg/kg)				see below
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDT	4.16E-03	1.57E-03	4.00E-03	1.04E+00	3.93E-01
Nickel	1.63E+01	2.06E+01	3.63E+01	4.50E-01	5.68E-01

TABLE J-4-5
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
CAPITELLA CAPITATA -- ERM COMPARISON

Ecological Hazard Quotient = Sc/TRV					
Parameter	Definition			Default	
Sc	Soil Concentration (mg/kg)			see below	
TRV	Toxicity Reference Value (mg/kg)			see TRV summary page	
Chemical	Average Sc	RME Sc	TRV capitella capitata	Average EHQ	RME EHQ
4,4'-DDT	4.16E-03	1.57E-03	7.00E-03	5.94E-01	2.24E-01
Nickel	1.63E+01	2.06E+01	5.16E+01	3.16E-01	3.99E-01

**TABLE J-4-6
INTAKE CALCULATIONS FOR POND SEDIMENT
FIDDLER CRAB**

SEDIMENT INGESTION				
INTAKE = (Sc * IR * AF * AUF) / (BW)				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Sc	Sed concentration (mg/kg)	see data page		
IR	Ingestion rate of sed (kg/day)	1.16E-05		Cammen, 1979
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997
AUF	Area Use Factor	1		EPA, 1997
BW	Body weight (kg)	9.00E-03		based on width/length eq.
Chemical	Average Sc	RME Sc	Average Intake	RME Intake
4,4'-DDT	4.16E-03	1.57E-03	5.34E-06	2.02E-06
Nickel	1.63E+01	2.06E+01	2.10E-02	2.65E-02
FOOD INGESTION				
INTAKE = (Ci * IR * DFi * AUF) / (BW)				
Parameter	Definition	Value		Reference
Intake	Intake of chemical (mg/kg-day)	calculated		
Ci	Invertebrate concentration (mg/kg)	see FoodConc page		
IR	Ingestion rate of food (kg/day)	1.16E-05		Cammen, 1979
Dfi	Dietary fraction of invertebrates (unitless)	1.00E+00		TPWD website
AUF	Area Use Factor	1		EPA, 1997
BW	Body weight (kg)	9.00E-03		based on width/length eq.
Chemical	Average Invertebrate	RME Invertebrate	Average Intake	RME Intake
4,4'-DDT	3.33E-03	1.26E-03	4.27E-06	1.61E-06
Nickel	1.47E+01	1.85E+01	1.89E-02	2.38E-02
TOTAL INTAKE				
INTAKE = Sediment Intake + Food Intake				
			TOTAL Average Intake	TOTAL RME Intake
Chemical				
4,4'-DDT			9.62E-06	3.63E-06
Nickel			3.98E-02	5.03E-02

**TABLE J-4-7
INTAKE CALCULATIONS FOR POND SEDIMENT
SANDPIPER**

SEDIMENT INGESTION							
INTAKE = (Sc * IR * AF * AUF) / (BW)							
Parameter	Definition	Value		Reference			
Intake	Intake of chemical (mg/kg-day)	calculated					
Sc	Sediment concentration (mg/kg)	see data page					
IR	Ingestion rate of sed (kg/day)	2.10E-02		EPA, 1993			
AF	Chemical Bioavailability in sediment (unitless)	1		EPA, 1997			
AUF	Area Use Factor	1		EPA, 1997			
BW	Body weight (kg)	2.15E-01		Dunning, 1993			
Chemical		Average Sc	RME Sc	Average Intake	RME Intake		
4,4'-DDT		4.16E-03	1.57E-03	4.06E-04	1.53E-04		
Nickel		1.63E+01	2.06E+01	1.59E+00	2.01E+00		
FOOD INGESTION							
INTAKE = ((Cc * IR * Dfc * AUF)/(BW) + (Cw * IR * DFwa * AUF) / (BW)							
Parameter	Definition	Value		Reference			
Intake	Intake of chemical (mg/kg-day)	calculated					
Cc	Crab concentration (mg/kg)	see FoodConc page					
Cw	Worm concentration (mg/kg)	see FoodConc page					
IR	Ingestion rate of food (kg/day)	1.08E-01		EPA, 1993			
Dfc	Dietary fraction of crabs (unitless)	4.00E-01		prof. judgement			
Dfw	Dietary fraction of worms (unitless)	6.00E-01		prof. judgement			
AUF	Area Use Factor	1		EPA, 1997			
BW	Body weight (kg)	2.15E-01		Dunning, 1993			
Chemical		Average Crab	RME Crab	Average Worm	RME Worm	Average Intake	RME Intake
4,4'-DDT		1.67E-02	6.31E-03	3.33E-03	1.26E-03	4.36E-03	1.65E-03
Nickel		0.00E+00	0.00E+00	1.47E+01	1.85E+01	4.43E+00	5.59E+00
TOTAL INTAKE							
INTAKE = Sediment Intake + Food Intake							
						TOTAL Average Intake	TOTAL RME Intake
Chemical							
4,4'-DDT						4.77E-03	1.80E-03
Nickel						6.02E+00	7.60E+00

TABLE J-4-8
INTAKE CALCULATIONS FOR POND SEDIMENT
GREEN HERON

FOOD INGESTION						
$\text{INTAKE} = ((C_f * IR * D_{ff} * AUF) / (BW)) + (C_c * IR * D_{fc} * AUF) / (BW)$						
Parameter	Definition	Value			Reference	
Intake	Intake of chemical (mg/kg-day)	calculated				
C _f	Fish concentration (mg/kg)	see FoodConc page				
C _c	Crab concentration (mg/kg)	see FoodConc page				
IR	Ingestion rate of food (kg/day)	1.13E-01			EPA, 1993	
D _{ff}	Dietary fraction of fish (unitless)	7.50E-01			Kent, 1986	
D _{fc}	Dietary fraction of crab (unitless)	2.50E-01			Kent, 1986	
AUF	Area Use Factor	1			EPA, 1997	
BW	Body weight (kg)	3.75E-01			Dunning, 1993	
Chemical	Average Fish	RME Fish	Average Crab	RME Crab	Average Intake	RME Intake
4,4'-DDT	2.41E-03	9.11E-04	1.67E-02	6.31E-03	1.80E-03	6.78E-04
Nickel	8.82E-01	1.11E+00	0.00E+00	0.00E+00	1.98E-01	2.50E-01

TABLE J-4-9
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
FIDDLER CRAB

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV Fiddler Crab	Average EHQ	RME EHQ
4,4'-DDT	9.62E-06	3.63E-06	1.47E-01	6.54E-05	2.47E-05
Nickel	3.98E-02	5.03E-02	1.70E+00	2.34E-02	2.96E-02

TABLE J-4-10
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
SANDPIPER

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV Sandpiper	Average EHQ	RME EHQ
4,4'-DDT	4.77E-03	1.80E-03	2.27E-01	2.10E-02	7.93E-03
Nickel	6.02E+00	7.60E+00	2.17E+01	2.78E-01	3.51E-01

TABLE J-4-11
ECOLOGICAL HAZARD QUOTIENT CALCULATIONS FOR POND SEDIMENT
GREEN HERON

Ecological Hazard Quotient = Intake/TRV					
Parameter	Definition				Default
Intake	Intake of COPC (mg/kg-day)				see Intake
TRV	Toxicity Reference Value (mg/kg)				see TRV summary page
Chemical	Average Intake	RME Intake	TRV Green Heron	Average EHQ	RME EHQ
4,4'-DDT	1.80E-03	6.78E-04	2.27E-01	7.92E-03	2.99E-03
Nickel	1.98E-01	2.50E-01	2.17E+01	9.16E-03	1.16E-02

TABLE J-4-12
AVERAGE CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
POND SEDIMENT

Cfood = Csed x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
Cfood = Chemical Concentration in food (mg/kg dry)										
Csed = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	Average Csed (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDT	4.16E-03	8.00E-01	3.33E-03	BSAF DB	4.02E+00	1.67E-02	BSAF DB	5.80E-01	2.41E-03	WSDOH, 1995
Nickel	1.63E+01	9.00E-01	1.47E+01	EPA, 1999		0.00E+00		5.40E-02	8.82E-01	Max value from Calcasieu RI

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

TABLE J-4-13
RME CONCENTRATION OF CHEMICAL IN FOOD ITEM (mg/kg)
POND SEDIMENT

C_{food} = C_{sed} x BSAF (or BSAF or BCF with food chain multiplier)										
where:										
C _{food} = Chemical Concentration in food (mg/kg dry)										
C _{sed} = Chemical Concentration in soil (mg/kg dry)										
BSAF Biota to Sediment Accumulation Factor (unitless)										
BCF = Bioconcentration Factor (unitless)										
Compound	RME C _{sed} (mg/kg)	Sediment to Worm BSAF	Worm Concentration	Reference	Sediment to Crab BSAF	Crab Concentration	Reference	Sediment to Fish BSAF	Fish Concentration	Reference
4,4'-DDT	1.57E-03	8.00E-01	1.26E-03	BSAF DB	4.02E+00	6.31E-03	BSAF DB	5.80E-01	9.11E-04	WSDOH, 1995
Nickel	2.06E+01	9.00E-01	1.85E+01	EPA, 1999		0.00E+00		5.40E-02	1.11E+00	Max value from Calcasieu RI

Notes:
* For BAFs and BCFs for LPAHs and HPAHs, the most conservative value for the individual PAHs was used to estimated food concentrations.

APPENDIX K – TABLE REFERENCES

- Cammen, L. 1979. Ingestion Rate: An Empirical Model for Aquatic Deposit Feeders and Detritivores. *Oecologia*. 44:303-310.
- Dunning, Jr., JB. 1993. *CRC Handbook of Avian Body Masses*. CRC Press, Inc.: Boca Raton, Florida.
- Kent, DM. 1986. Behavior, habitat use, and food of three egrets in a marine habitat. *Colonial Waterbirds*. 9:25-30.
- Neill, 1998. Personal communication on March 13, 1998 as contained in Alcoa, 2000.
- Sample, B.E., D.M. Opreko, and G.W. Suter II, 1996. *Toxicological Benchmarks for Wildlife: 1996 Revision*. Health Sciences Research Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- Texas Parks and Wildlife Department (TPWD), 2005. Online database with endangered species listing. www.tpwd.state.tx.us/huntwild/wild/species/?c=endangered.
- United States Environmental Protection Agency (EPA), 1993. *Wildlife Exposure Factors Handbook, Volume I of II*. Office of Research and Development. EPA/600/R-93/187a.
- United States Environmental Protection Agency (EPA), 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final*. Office of Solid Waste and Emergency Response. OSWER 9285.7-25. EPA 540-R-97-006. June.
- United States Environmental Protection Agency (EPA), 1999. *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. Office of Solid Waste and Emergency Response. EPA530-D-99-001A. August.
- United States Environmental Protection Agency (EPA), 2000. *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins*. EPA Region 4, originally published November 1995, Website version last updated May 2000: <http://www.epa.gov/region4/waste/oftecser/healthbul.htm>.
- United States Environmental Protection Agency (EPA), 2005a. *Ecological Soil Screening Levels for Antimony. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-61. February.
- United States Environmental Protection Agency (EPA), 2005b. *Ecological Soil Screening Levels for Cadmium. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-65. March.
- United States Environmental Protection Agency (EPA), 2005c. *Ecological Soil Screening Levels for Chromium. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-66. March.
- United States Environmental Protection Agency (EPA), 2005d. *Ecological Soil Screening Levels for Vanadium. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-75. April.
- United States Environmental Protection Agency (EPA), 2005e. *Ecological Soil Screening Levels for Lead. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-70. March.

United States Environmental Protection Agency (EPA), 2005f. *Ecological Soil Screening Levels for Dieldrin. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-56. March.

United States Environmental Protection Agency (EPA), 2005g. *Ecological Soil Screening Levels for Barium. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-63. February.

United States Environmental Protection Agency (EPA), 2007a. *Ecological Soil Screening Levels for DDT and Metabolites*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-57. April.

United States Environmental Protection Agency (EPA), 2007b. *Ecological Soil Screening Levels for Polycyclic Aromatic Hydrocarbons (PAHs). Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-78. June.

United States Environmental Protection Agency (EPA), 2007c. *Ecological Soil Screening Levels for Copper. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-68. February.

United States Environmental Protection Agency (EPA), 2007d. *Ecological Soil Screening Levels for Nickel. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-76. March.

United States Environmental Protection Agency (EPA), 2007e. *Ecological Soil Screening Levels for Zinc*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-73. June.

United States Environmental Protection Agency (EPA), 2007f. *Ecological Soil Screening Levels for Selenium. Interim Final*. Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-73. June.